

LUCY WALKER  
jewellery

# BEZEL SETTING

## FOR ROSE CUTS AND CABOCHONS



“If you hear a voice within you say,  
“you cannot paint”  
then by all means paint,  
and that voice will be silenced”

Vincent Van Gogh

# CABOCHONS

A **cabochon** (often shortened to “cab” in the trade) is composed of a highly polished domed top and a flat or slightly curved base and may be cut in any shape, the most popular however is the oval.

Cutting gemstones as cabochons was one of the earliest ways to fashion gemstones and they are still popular today. Most opaque or translucent material is cut into cabochons, and some stones, such as opal, moonstone and star sapphire show off unique optical effects to their best advantage when cut in this way.



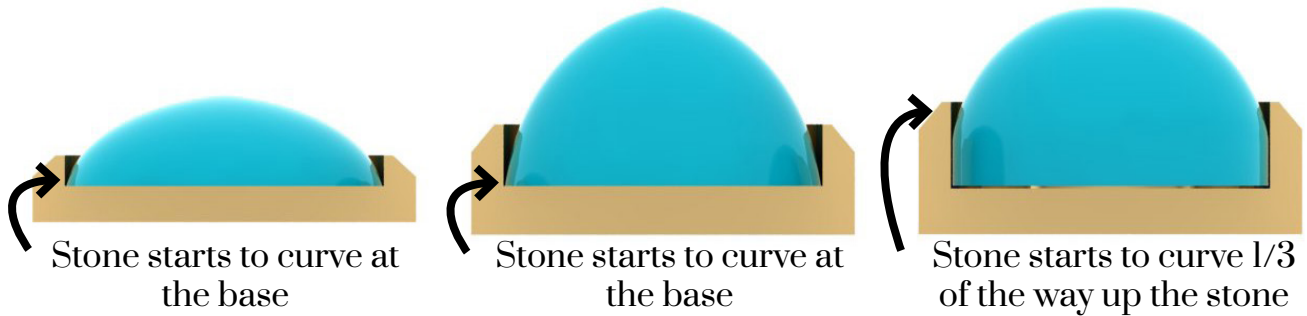
# ROSE CUTS

A **rose cut** stone is one of the earliest faceted stones dating back to the 16th Century. It is similar to a cabochon in that it usually has a flat back. However, instead of a smooth curved top, a series of triangular facets form the dome. Rounds are most popular but many other shapes are cut in the rose cut style. For setting purposes, rose cuts can be treated much the same as cabochons.



# MAKING THE BEZEL

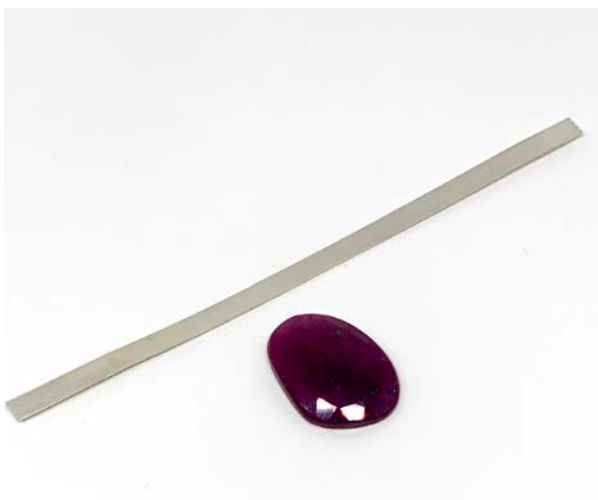
## HOW HIGH SHOULD I MAKE MY BEZEL?



Too high a bezel will be difficult to set and will most likely end up lumpy and bumpy, whilst a bezel that's too short won't securely hold your stone in place. So here we need to pay attention to the profile of our cabochon. Look at the height, the angle where the dome meets the base, and if the cabochon has vertical sides at the base before it starts to curve over (as in the bezel on the right).

The most important part to note is the point at which the stone starts to curve - you'll want to make your bezel slightly higher than this point - somewhere in the region of 0.5 - 1mm higher is a good starting point, but this of course depends on the exact proportions of the stone.

# MAKING THE BEZEL



We are going to be using commercially made fine silver bezel wire together with a rose cut ruby. The bezel wire we are using is 30 gauge (0.25mm thick) and 3.2mm high. This gauge is ideal for when just starting out with bezels as it's relatively easy to push down over the stone.

You can buy pre-made bezel wire in various gauges and heights, but of course you can cut your own from sheet if you prefer. Because we are using pre-made bezel wire, we will need to file or cut it down to the correct height, but we'll do that later once the bezel is formed and soldered to a back plate where it will be much easier to do.





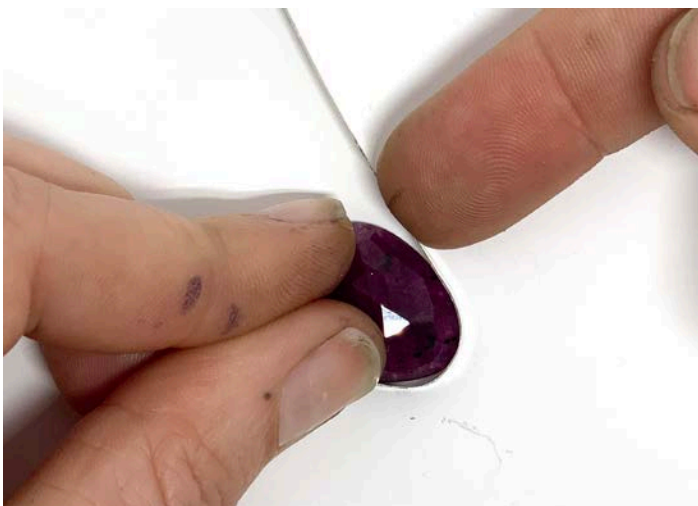
With odd shaped stones, there are no formulas to calculate the length required, so we just have to start out with a piece that looks longer than we need - you can wrap a piece of string or paper around the stone first to get a rough idea.

We need to ensure one end of our bezel wire is filed perfectly flat and perpendicular to its length. I'll hold the wire as close to the bench pin as possible and file along the height of the wire (as shown) rather than across it. A barette escapement or needle file is perfect for this job.



If we try to file across the height of the bezel wire, it will simply bend it out of shape, so always file ALONG the height.

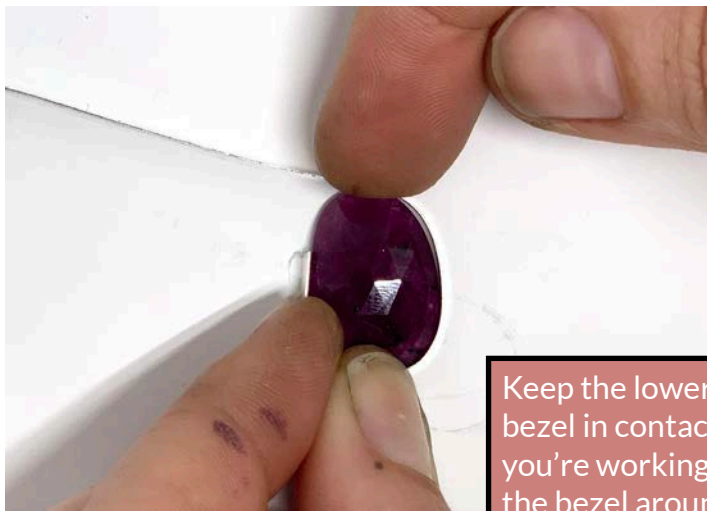
If you have a miter vice, you can also use that too - it does make life easier, but it's a good idea to learn to file straight edges manually too.



Because we are using bezel wire that is only 30 gauge and made from fine silver, we can form the bezel easily around the stone by hand. Make sure your stone is placed on a flat surface and carefully form the bezel by pulling it tightly against the stone.

If you're struggling to keep hold of your stone, you can always use a little double sided tape to secure the stone to a work surface as you wrap the bezel around it.





Ensure the bezel wire stays perfectly vertical while you're bending it and don't allow the walls of the bezel to fall inwards or outwards. A good way to make sure this happens is by always making sure the bottom edge of the bezel is in contact with the surface you're working on.

Keep the lower edge of the bezel in contact with the surface you're working on as you form the bezel around the stone



Pull the bezel tightly so that it overlaps. Use a fine sharpie or a scribe to mark the exact point at which the bezel overlaps.

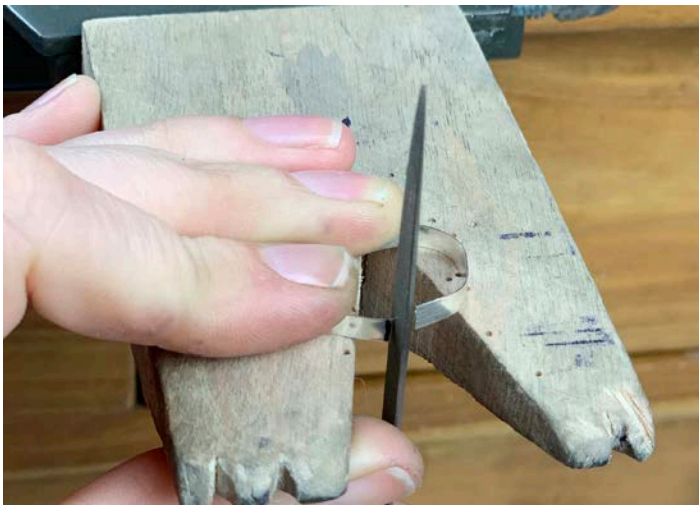
Hold the bezel tight with your fingers as you mark the overlap



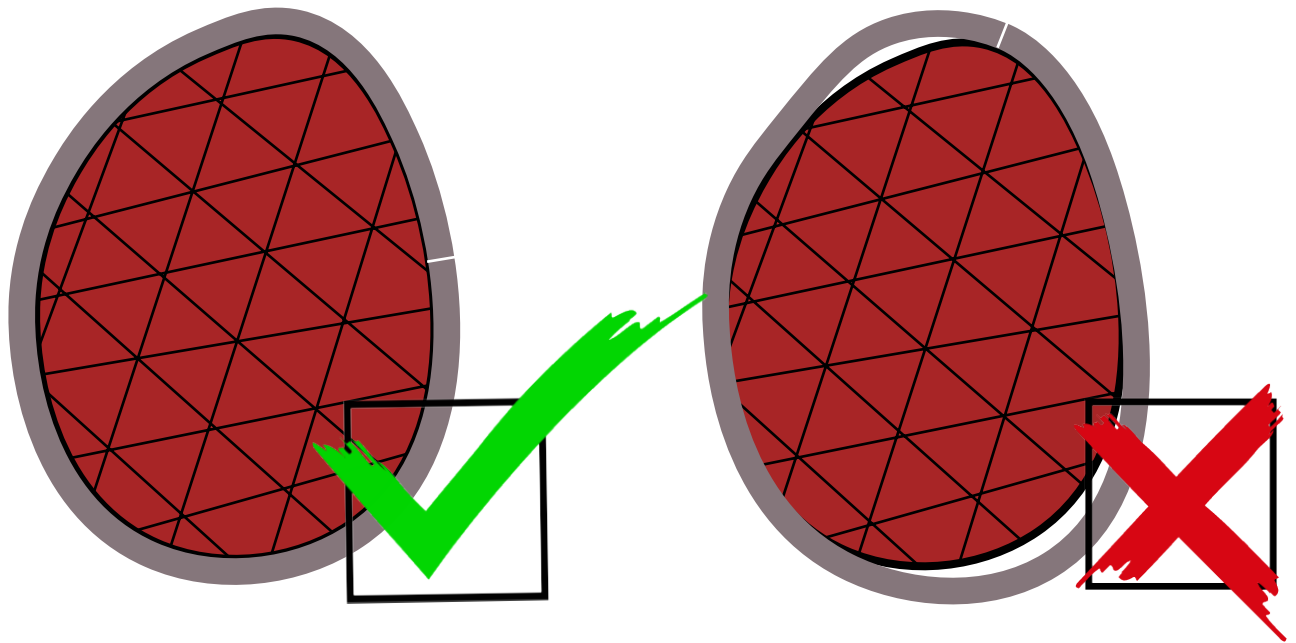
Cut through the metal here using your flush cutters or shears – make sure you are cutting straight and you are cutting on the outside of the line.

Make sure the flat cutting side of your flush cutters is facing the bezel to ensure you get a flat even cut





Use a barette needle or escapement file to true up the edge you just cut. I prefer to do this as shown, but if you prefer, you can open up the bezel and file along the height of the wire as we did initially. Keep checking the fit of the bezel until it fits perfectly around the stone.



The bezel should fit perfectly around the stone, with no gaps. The solder seam should also be located on the flattest part of the stone, and not on a tight curve or a corner.



Once you have the bezel the right shape and size, simply line up the edges for soldering - we don't need to worry about the shape now, as long as we know the size is perfect, we can fix the shape later..... within reason - don't mangle it!

Check the alignment from the top, bottom and the sides - it can't be fixed later so make sure it's perfect now!

Don't worry about any sharpie left on your piece - that will burn off cleanly during soldering.

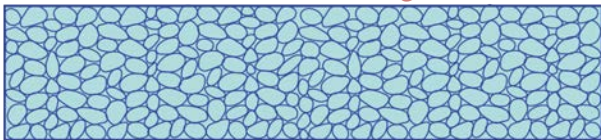


# SILVER SOLDERING

ALSO CALLED HARD SOLDERING AND SILVER BRAZING

Silver solder is an alloy used to join metals that have a higher melting temperature (such as sterling silver, bronze, brass or copper). During soldering, silver solder is melted and drawn into a tight-fitting gap between two metal surfaces through capillary action. Because of the high temperatures involved, the solder diffuses into either side of the joint to create a solder seam which is not a single entity, but an area where the solder has penetrated the crystal structure of the metals to be joined. These solder joints, when done correctly, are very strong.

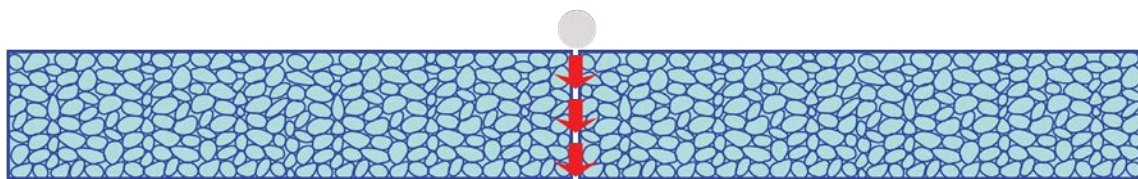
Tightly packed crystal structure  
before heating



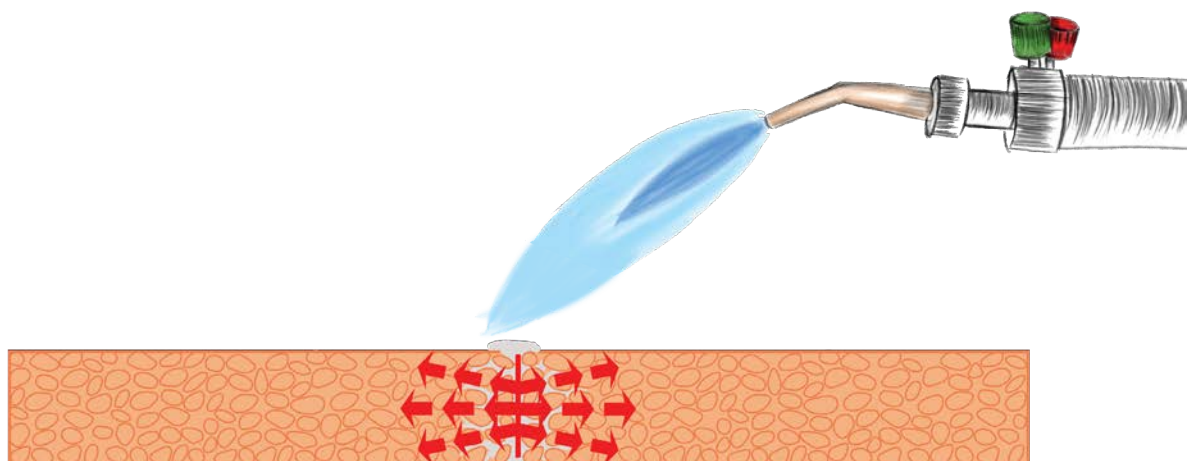
Open crystal structure at soldering  
temperature



When metals are heated to close to their melting point, the crystal grains, from which they are made, expand and move apart.



When solder is introduced with its lower melting point, molten solder is pulled into the joint through capillary action.



Because the crystal grains expand and move apart when heated to the temperature at which the solder flows, the solder is able to diffuse into the space between the crystals and form a very strong bond.



## FLUX

Flux plays a very important role in soldering. It forms a protective glass-like layer around the area to be soldered and absorbs oxygen, thus preventing the join from oxidisation. Remember - solder joins need to be clean and free from oxidisation for the solder to flow. The flux we use in the studio is paste flux made mostly from borax, although other types of fluxes are available.

**Silver solder will not flow if we don't apply flux to the join before heating.**



## SILVER SOLDER GRADES

Commercially available silver solder comes in 5 different grades, each with different melting temperatures. The melting temperature of the solder is controlled by the amount of zinc in the alloy - the more zinc, the lower the melting temperature. The different melting temperatures make soldering multiple joins on a single piece of jewellery much easier. Most jewellers will just use hard, medium and easy solder.

### APPROXIMATE MELTING TEMPERATURES

STERLING SILVER	893 °C
IT SOLDER	809 °C
HARD SOLDER	773 °C
MEDIUM SOLDER	747 °C
EASY SOLDER	711 °C
EXTRA EASY SOLDER	681 °C





# SOLDERING STEP BY STEP

**TIGHT JOIN** - Check the join is tight and correctly aligned. Hold the ring up to the light, you should not be able to see through the join. Use your saw to cut through the join if necessary – this ensures perfect alignment when done correctly.

**CLEAN JOIN** - Make sure the join is clean. Even if it looks clean, a quick touch up with 600 grit sandpaper around the area to be soldered will help the solder flow.

**FLUX** - Use a paintbrush to apply flux to the area to be soldered. Silver solder will not flow without flux.

**PRE-HEAT** - Heat the entire ring until the flux goes from white to clear before placing the solder. If you place the solder before the flux goes clear, it will likely move when the flux starts to bubble.

**PLACEMENT** - Make sure you place your solder so it touches both sides of the join.

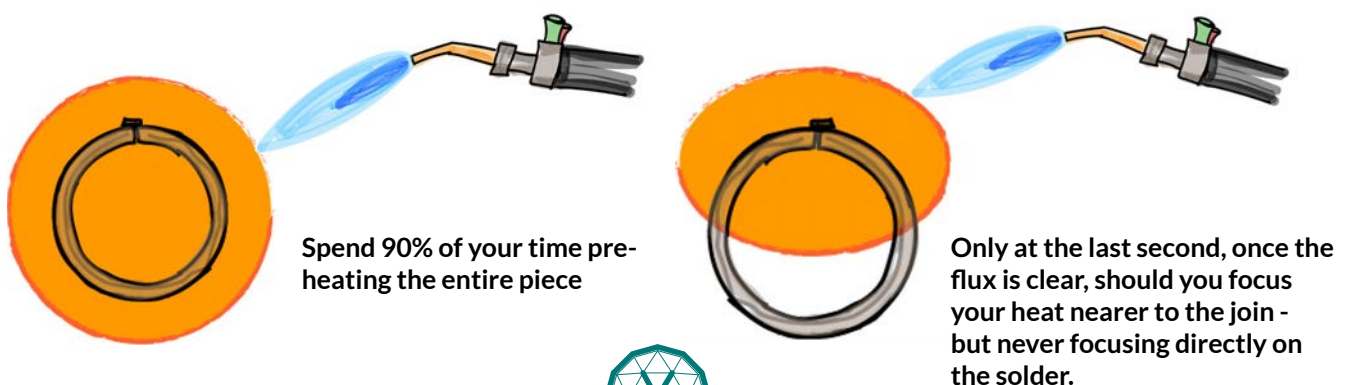
**HEAT EVENLY** - It is of paramount importance to ensure both pieces to be soldered reach the soldering temperature at the same time. If not, the solder will simply “jump” to the hottest side.

**KEEP THE TORCH MOVING** - Unless you want a total meltdown- enough said.

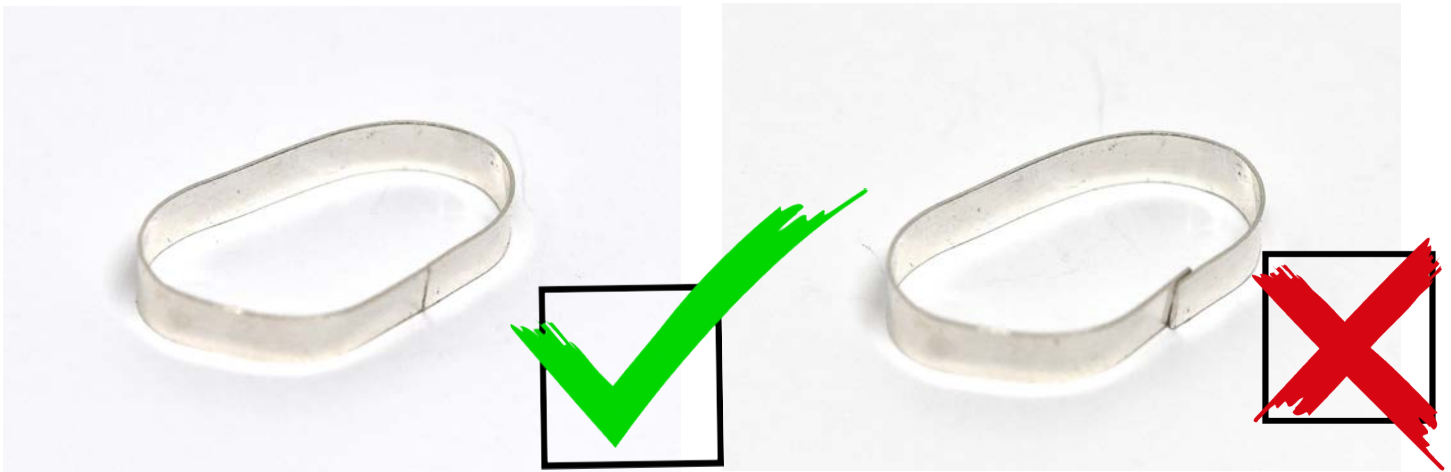
**BIG FIRE** - Don't be afraid of using a large flame. If the solder isn't flowing, it's often because the flame isn't large enough.

**FOCUS** - Spend about 90% of the time of the whole soldering operation heating the entire piece. For the final second you can focus your heat around the area being soldered. Never focus the flame directly on the solder, the solder will burn which will then increase its melting temperature and render you a nervous wreck.

**STOP HEATING** - Do not keep heating after soldering is complete. Extended heating can cause firescale - if you don't know what that is yet, you will soon! It's also very important to make sure you don't melt your piece in the process of soldering.



# SO LET'S SOLDER THE BEZEL CLOSED



Double check that your bezel is closed and aligned perfectly. The edges should never be overlapping and should be aligned in all orientations - needless to say there should be no gaps. From this point onwards you'll have to handle your bezel with care, it's very easy to catch it, and mess up that perfect alignment without even knowing it!



Place a small pallion of hard solder onto your soldering surface and carefully position your bezel directly on top of the solder pallion ensuring that the solder is touching both sides of the join.



Carefully flux the join. If you're a little heavy handed, you can also flux the join before placing the bezel on top of the solder.





Use a 3 inch or so neutral flame to heat the entire bezel until the solder is almost ready to flow. Once the flux is clear and the solder is ready to flow, you can move the flame and heat the half of the bezel nearest the join - keep feathering the flame and move it quickly on and off the bezel to avoid melting anything. Be very careful here, fine silver melts a little easier than sterling silver. Remember to keep the flame moving quickly and lifting the flame on and off your bezel.

Once the bezel is soldered, quench and pickle. Double check your join with your loupe once pickled to ensure everything is still perfectly aligned and the solder flowed all the way up the bezel. If the solder didn't flow all the way, flux your piece, add a little more solder if necessary and flow the solder again.

If your bezel join didn't solder in perfect alignment, scrap the bezel and start again. It really is important to be as accurate as possible every step of the way. If we were to cut through either side of the join and resolder, the bezel would be too small. If we were just to continue, your bezel won't look particularly pretty when finished.



Reshape the bezel after soldering by pushing it gently over the stone. Once back to the perfect shape, check the fit of the stone by placing the stone into the bezel - not the bezel onto the stone. The stone shouldn't require forcing in, but there should also be no visible gaps around the edge of the stone. If the bezel is too large, you will need to cut the bezel and re-solder.



If the bezel is too small, it can be enlarged slightly by squeezing at equal distances around the bezel with your flat and round pliers several times (the round jaw should be inside the bezel). You'll need to do this from the top and the bottom of your bezel to ensure an even result. Do not use regular round nosed pliers here or you'll leave horrendous marks around the outside of your bezel.



We're almost ready to solder the bezel to the backplate. But before we do, I just want to check on my solder joint and make sure there's no excess solder there. It's much easier to clean up any lumps or bumps now before we solder it down to the back plate.



If you do have a little excess solder on the outside of the bezel you can easily clean it up with a barette needle or escapement file. Just be careful here to only file the excess solder away and don't file into the bezel itself - it's already super thin as it is.



Once I've filed it, I'll give it a quick touch up with a medium grit pumice wheel just to get everything smoothed out.



# ATTACHING THE BEZEL TO THE BACKPLATE



At this point, especially if you're using an asymmetrical stone, you'll need to ensure you know which is the top and which is the bottom of the bezel! Mark the base of the bezel with a sharpie to ensure you remember which side is which. It's easy to forget and accidentally solder the wrong side to the back plate later!

Use 600 grit sandpaper on a PERFECTLY flat surface to level the bottom of the bezel ensuring that it's perfectly flat. Be careful and try not to deform the bezel here.

## TOP TIP

A little trick to ensure you have a perfectly flat base is to cover the bottom of the bezel in sharpie and keep sanding until you have removed all the ink.



For the next step, you'll need to decide if you want to make a bezel with a border around the edge, or a simple one without. We will be making ours with a small border around the edge here.



Cut a piece of 18 or 20 gauge dead soft silver sheet slightly larger than your bezel (or larger still if you want a border around the edge of your bezel). We want to use dead soft here to avoid any warpage when we solder, so if you have half hard or hard silver, then anneal it first.

Sand the backplate as necessary all the way to 1200 grit sandpaper - the surface must be perfectly smooth at this point if you are having a bezel with a border. Check the fit of the bezel again at this stage as it may have become slightly distorted from sanding and you really don't want to solder down a wonky bezel.



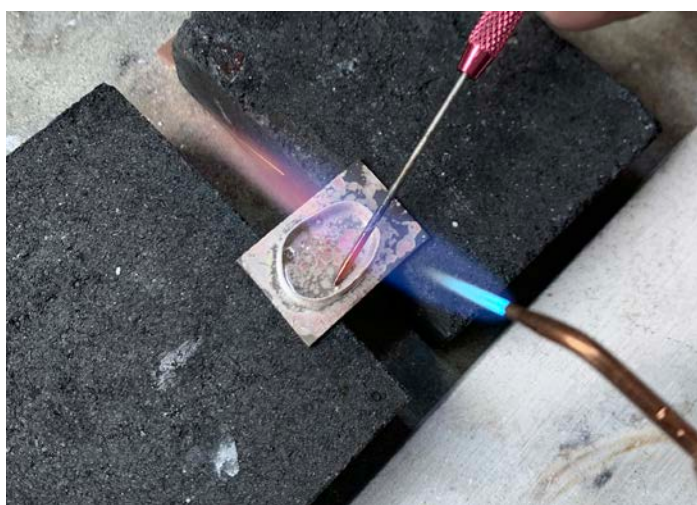


Apply flux to the base of the bezel and place the bezel on top - make sure the bezel isn't touching the outside edge of the back plate anywhere.



When soldering my bezel to the back plate I like to have it suspended between two charcoal blocks. This way I can get my torch underneath and heat the back plate directly, so I don't overheat my bezel when soldering. Make sure your charcoal blocks are nice and level so the bezel doesn't slide around.

Depending on whether or not you want a border around your stone dictates where you place your solder. If you intend to have no border then it's easiest to place your solder on the outside of the bezel. If you want a border, you will need to place the solder on the inside so no excess solder will be visible on the outside of the bezel.



The size of your stone will obviously dictate the amount of solder needed. For a stone that's about 1cm in diameter, I'll generally use 4 solder pallions that have been rolled as flat as possible. Each is about 1.5 to 2mm square. Knowing how much solder to place will come with time, but it's better to have too little and add more later than have too much. If you have too much solder here, you'll be left with little bumps of excess solder. To place the solder, I find a cleaner result is achieved by using a pick to place solder balls rather than pallions. We are having a border, so our solder is going on the inside of the bezel. If you haven't used a solder pick before, fear not!



# USING A TITANIUM SOLDER PICK

Solder does not stick easily to your titanium solder pick, it sticks to the flux on your solder pick - but only if the flux is at the right temperature.

When flux is cold - it's hard like glass

When hot - it's liquid like water

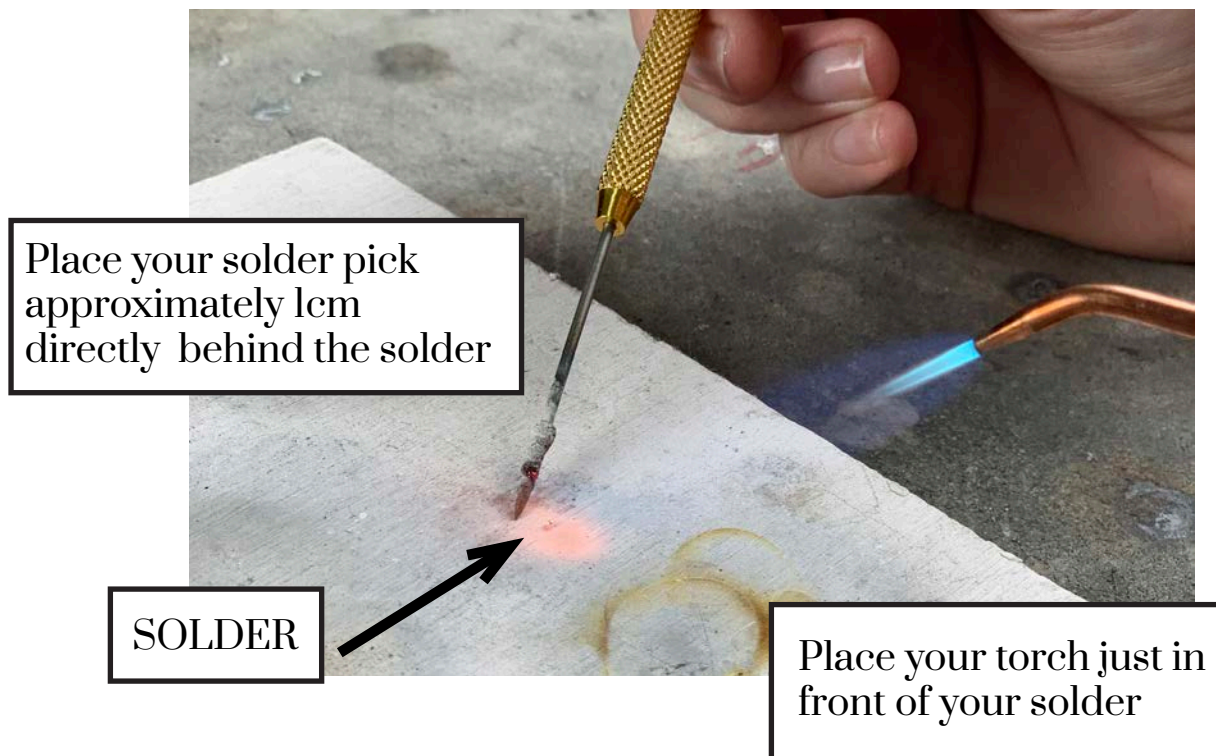
When it's in between, it's like honey - honey is yummy and sticky!

When you want to pick up your solder, you need the flux on your solder pick to be like honey. When you want to place your solder on a join, you need the flux on your pick to be liquid like water (hot - so it releases it easily), and you want the flux on your join to be sticky like honey so the solder sticks to that instead.

It's important when placing solder to make sure you are heating your solder pick (not the solder directly). You can overheat solder - and doing so increases it's melting temperature.

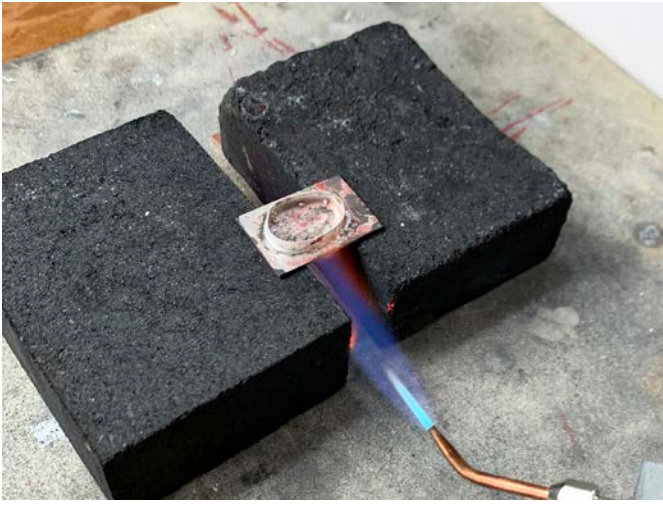
## SETTING UP FOR SOLDERING

Create a straight line with your solder in the middle, your pick behind the solder and your torch in front. The pick should be about 1cm behind the solder.



To pick up your solder easily, place a solder pallion on a charcoal block or other soldering surface, with your pick 1cm behind it. Heat the solder with your torch until it turns into a ball. Remove the heat IMMEDIATELY and move your pick forward to scoop up the solder. It's super important - if you don't want a mushy solder mess covering your soldering block, to REMOVE THE HEAT BEFORE SCOOPING!

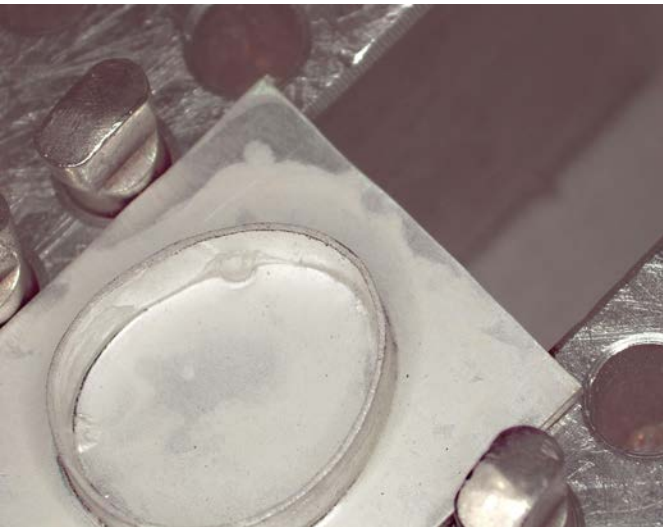




Once all your solder is placed, it's time to flow the solder. We want to flow it fast and all in one go. I'll concentrate the heat on the underside of the back plate to begin and once the flux goes clear from above. Make sure the tip of that inner blue cone of your flame is never focusing directly on your bezel.

One of the biggest issues students have is that their solder is flowing, but the bezel doesn't solder to the back plate. The reason for this is that the bezel (being so much smaller) is getting much hotter than the base plate, and so the solder is flowing up towards the hottest point.

Once your solder has flowed, quench and pickle the bezel, before double checking the solder joins. If there are any gaps, re-flux the piece and re-flow the solder, adding a little more solder if necessary.



After soldering, we need to make sure there's no excess solder on the inside of the bezel. Any little lumps or bumps could cause your stone to break under the pressure of setting. The easiest way is to reflow the solder, but often when there is too much solder, the bumps won't always reflow.



If you do have this problem, the easiest way to remove it is with a tiny ball bur. I'm using a 0.5mm ball bur here to gently grind away the excess solder. I don't apply much pressure at all here and keep the bur moving at all times until I have completely ground away the little bump.







And there we go, all removed! It is really important to remove these lumps or bumps if they occur. When pressure is applied during setting, these can easily cause a fragile stone to fracture.

## PIERCING OUT THE BEZEL



You might be tempted to check the fit of your stone at this stage. Don't! Wait just one second!

First, we need to mark a line around the inside of our bezel that's approximately 2mm from the bezel wire itself. You can use a pair of dividers for this, but I like to use a thin marker pen and use the bezel itself as a guide so that I don't accidentally scratch the base plate.



Use a 1mm drill bit to drill just on the inside of the line. We don't want to drill in the middle here, or we are technically just making more work for ourselves with the saw!

OK now you can check the fit of your stone. It's a good idea to have a hole in the back of our setting before checking - just in case the stone gets wedged in there and we need to poke it out from behind. If you don't intend to pierce out the back plate - you can use a little dental floss behind your stone so you can pull the stone back out if it gets stuck!





Thread your sawblade through the drill hole, and cut out the center of the bezel. Be careful not to smooch your bezel with your fingers. It's a little easier to pierce out the inside first - there's a little extra metal to hold on to this way, so less chance of smooching up the bezel!



We are going to repeat the process for the outside. Use a sharpie to draw on a guide line - I'm simply following the shape of the stone here and leaving a 3mm border all the way around.

You can get a little more creative if you prefer, or have no border at all.

Now use your saw to cut the outside too. This gets a little tricky as we are cutting away the metal we are holding on to, so be careful and watch those fingers behind the saw blade!



Use your flat hand file (a #0 or #2 cut is perfect) to file the edges of the back plate nice and smooth. We want to remove any dings or marks here with the file, we should be able to see nothing but our file marks.

Watch out for smooching that bezel again. Grip the bezel nice and gently and do not ram it against your bench pin.



You'll need to file the inside too. I'm using a half round hand file with a #2 cut, but you can use an escapement or needle file no drama at all. Generally however, we do want to use the largest file we can for the job, it saves time and gives a better finish. As with above - no marks other than file marks should be visible after filing.





Ok you guessed it, we are going to continue cleaning up the outside with sandpaper sticks. I'll stick to my usual routine of 240, 600, 800 and 1200 grit. Remember not to move on to the next grit until all the marks from the previous grit are removed.



One option to clean up the inside of the back plate is sandpaper wrapped around a needle file. Again start with 240 grit and work through 600, 800 and 1200 on all filed areas. This is one option.....



Rather than sandpaper though, I like to use a coarse and a medium grit bullet shaped rubber wheel. There is no right or wrong here, just the way that works best for you!

You may have noticed that we didn't clean up the top of the backplate - we shouldn't need to here - it should be already sanded to 1200 grit from before we soldered, and because we placed our solder on the inside of the bezel, there should be no excess to clean up!

At this stage if you want to add a texture involving punches to your bezel backplate, now is the ideal time to do it! We are going to be adding textures with burs, so we'll leave that for a little later.



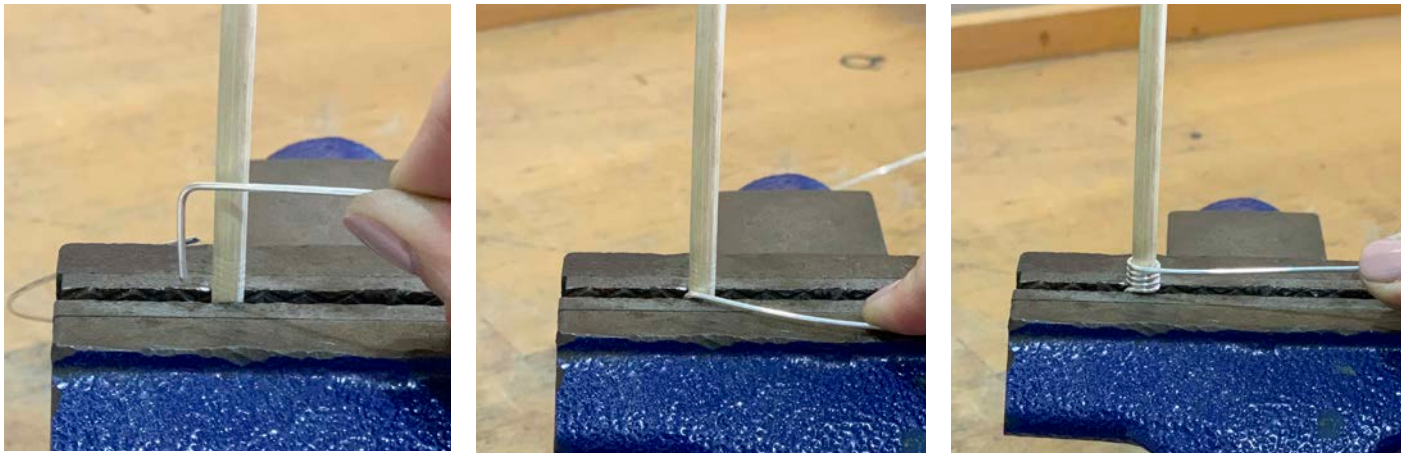
# JUMP RINGS

You'll need two jump rings for this project:

20 gauge wire with an inside diameter of 1.5 to 2mm

18 gauge wire with an inside diameter of approximately 5mm

## MAKING THE JUMP RINGS



We are going to need a couple of different sized jump rings for this project. Firstly we'll use 18 gauge round wire to make a jump ring with an inside diameter of 5mm, and secondly we'll need a jump ring in 20 gauge wire with an inside diameter of 1.5 to 2mm. Jump rings should always be just large enough to do the job at hand, and no larger. If they are not part of the design they shouldn't be overly large.

To start with, we need to find two mandrels that are the right shape and size for the job at hand. Steel rods make for great mandrels, as do drill bits, and pencils. In the above picture we are using a chopstick to create the 5mm inside diameter jump rings.

If you're feeling strong, you can simply wrap the wire around the mandrel. But if your fingers aren't quite so strong, you can use a vice as we did above. To start with, we need to bend an L-shape at the tip of the wire to use as an anchor point in the vice. Simply slot the end of the L between the vice jaws and your mandrel and carefully wrap the wire around the mandrel. It's important to keep the coil tight and the length of wire perpendicular to the mandrel at all times. Keep wrapping the wire around the mandrel until you have a small coil - I only need one jump ring here, but I'll usually make a coil of 10 or 20 to use later when needed.

Both the 5mm inside diameter jump rings and the 1.5 - 2mm inside diameter jump rings will be made exactly the same way.





Once the jump rings are coiled it should look something like this - notice all the coils are touching. Now carefully pull them off the mandrel.



Before moving on to the next step, we should trim off the excess wire with a pair of snips so that the coil is a little more comfortable to hold. Now the next step looks a lot harder than it is, but I promise it really isn't that tough, and you aren't going to cut your fingers off.



Start by holding the TOP of your coil between your thumb and forefinger and rest it against your bench pin. Take your saw with a 2/0 or 3/0 blade, and rest the blade on the first jump ring, with the blade tilting forwards by an angle of about 20 degrees or so.



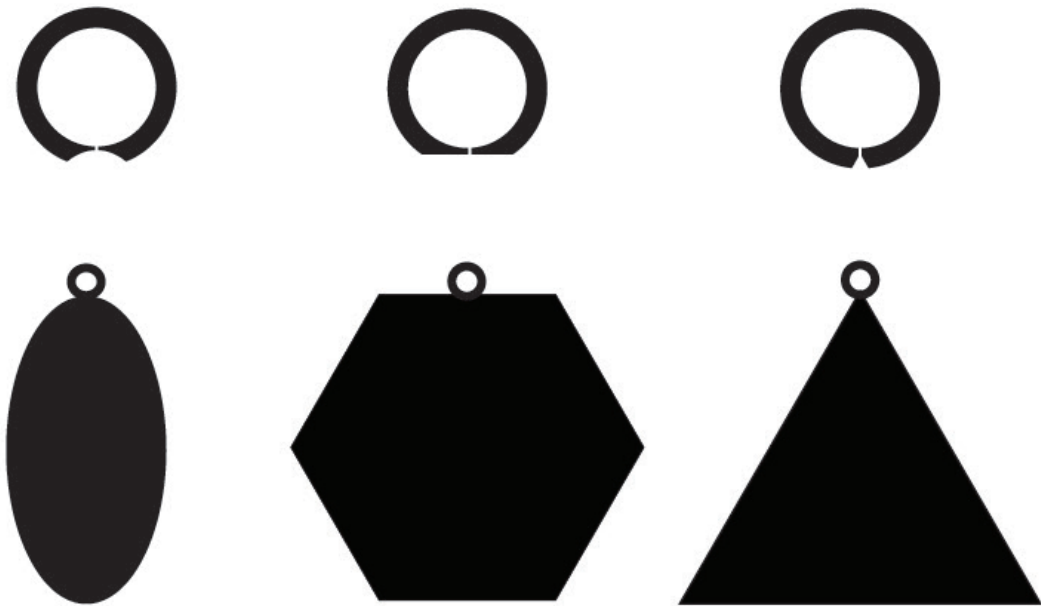
Whilst watching your sawblade, very carefully cut DIRECTLY down the center of the coil, cutting off one jump ring at a time entirely. There should be very little pressure applied here to your saw.



Do not cut part way through the jump ring and then peel it off, this will leave burrs, which will hinder closing the jump ring later.



# ATTACHING THE JUMP RINGS



Before beginning soldering, we need to ensure the jump ring has a good connection with the pendant so we can get the strongest solder joint possible. To do this, make sure your jump ring is closed and then, directly on the join, file approximately 3/4 of the way through the wire as detailed below so the jump ring fits securely to your piece.

**Oval** - file directly on the join of your jump ring with a flat file to begin with, then use a half round file to file a curve to match that of your piece.

**Hexagon** - File directly on the join of your jump ring with a flat file.

**Triangle** - File into the join of your jump ring using a triangular file.



Because our jump ring is tiny, and our pendant has a very gentle curve, I'll use my barrette needle or escapement file to file a flat spot directly on the join of the jump ring. Because of the small scale, using a half round file here really won't make a difference.

The jump ring should now sit perfectly against the top of the pendant. The solder joint will be much stronger because of this small detail.



# SOLDERING THE JUMP RINGS TO THE PENDANT



Line up the pendant and the jump ring on your soldering surface and add a little flux to the jump ring and pendant itself. Be careful not to move the jump ring - this will take a little practice as it tends to want to attach itself to the flux brush.

Prepare a small pallion of medium solder.



Because our setting is much larger than our jump ring, we need to concentrate our heat on that - and not the actual bezel itself! If we don't want a total meltdown, we need to aim the flame at the base of the bezel, to the back plate itself.



Once the flux is clear, use tweezers or your solder pick to place the medium solder so it's touching both the jump ring and the setting. Then return to heating the pendant itself (again aiming the torch at the base not the bezel itself) until the solder flows. Remember to heat evenly and do not focus the flame on the jump ring or the bezel wire.

It's important here to keep the flame moving! Keep feathering the flame and move it quickly on and off the bezel to avoid melting anything.

Once the jump ring is soldered, check that it is secure. You really don't want this jump ring popping off once the stones are set!





Now we need to attach the larger jump ring. Remember to open and close this in a sideways motion.

We want to hold the jump ring in cross locking tweezers as close to directly below the solder joint as possible. If we hold the jump ring too close to the join, it will be difficult to get things hot enough for soldering. Wherever they are placed, tweezers will conduct heat. It's better that they do this as far away from where we are soldering as possible.



Flux the joint and prepare another small pallion of medium solder - remember we can always add more solder if necessary, so just a teeny piece here.



Holding your torch like a Hollywood gangster - that is sideways on - heat the jump ring until the flux turns clear, then place the solder on the joint (I prefer to use a pick for this). Continue heating the jump ring evenly until the solder flows. Always be aware of your previous solder joints and ensure you don't bring those to soldering temperature too! Holding the torch sideways on helps from accidentally heating previous joins.

Quench and pickle the pendant, and now we're almost ready to set it.



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jewellery



# BEZEL

## HOW HIGH SHOULD I MAKE MY BEZEL?



Alrighty - back to the bezel height. Remember, we want our bezel to be just slightly higher than the point at which the stone starts to curve over.

If the bezel is a little high here, we can sand (not file) it down to the right height. We don't want to use a file for this, it's too coarse and our bezel will definitely get deformed in the process. So we'll stick to 240 grit sandpaper to get it to the correct height, and then just touch it up with 600, 800 and 1000 grit to make sure it's nice and smooth.

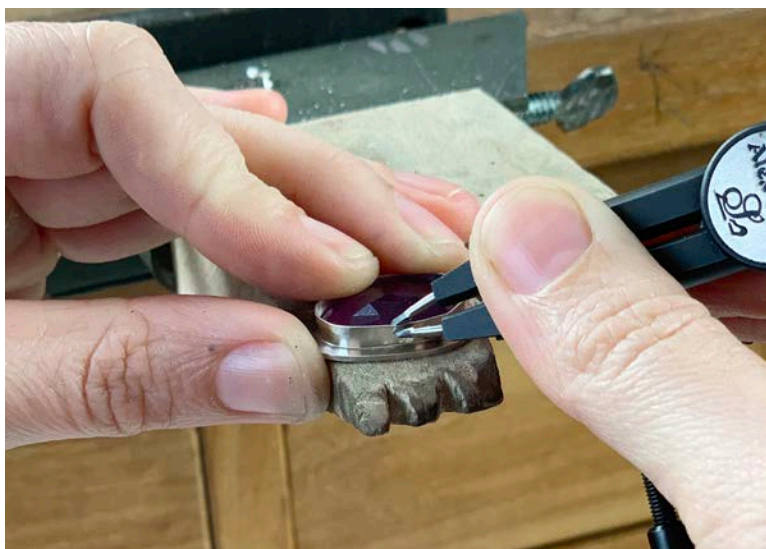


A neat little trick here is to protect the jump ring with a little masking tape before sanding the bezel to the correct height.



If the bezel is much too high at this stage as in the picture to the left, you may have to cut it down with a saw.





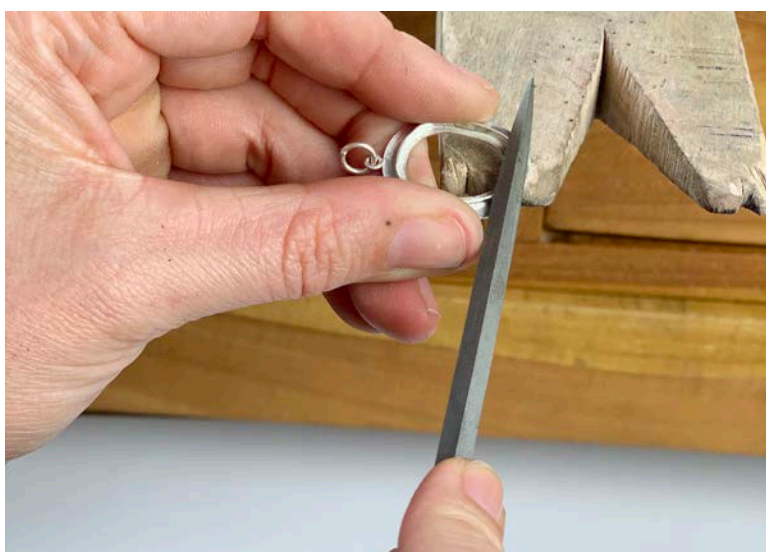
If I have to cut my bezel down to the correct height, I'll use a pair of dividers to mark the metal to be removed first. Take a cautious approach here, we don't want to remove too much metal and we will need to sand it after.



And now cut all round the bezel little by little, rotating the bezel as you cut. Do not try to slice through it like a sausage. Of course it's a good idea to start with the right height bezel in the first place, but when using commercial bezel wire, we are limited to the sizes available.

Once you've trimmed the bezel to the correct height, you'll need to sand it again to get a smooth finish.

## But the dome of my stone isn't even all the way around....



If your stone doesn't have an even curve all the way around, as is often the case with organic shapes, you'll need to file your bezel to match that curve - so the bezel will be lower in certain places. The finished setting looks really neat this way. I generally use a 3 or 4 cut needle or escapement file to carefully file down the lower points, or a sandpaper roll.

Again, you'll want to sand this after to 1200 grit to ensure the top of the bezel is nice and smooth.





You can also use rubber wheels in various grits to create a smooth surface on the top of your bezel. If you are using rubber wheels though, be careful not to round out the top of the bezel - keep the wheel perfectly perpendicular to the bezel and keep it moving at all times.



And there we have it - our bezel is the perfect height and it's all ready to set! But before we set it, let's give it a quick polish first



# POLISHING THE SETTING

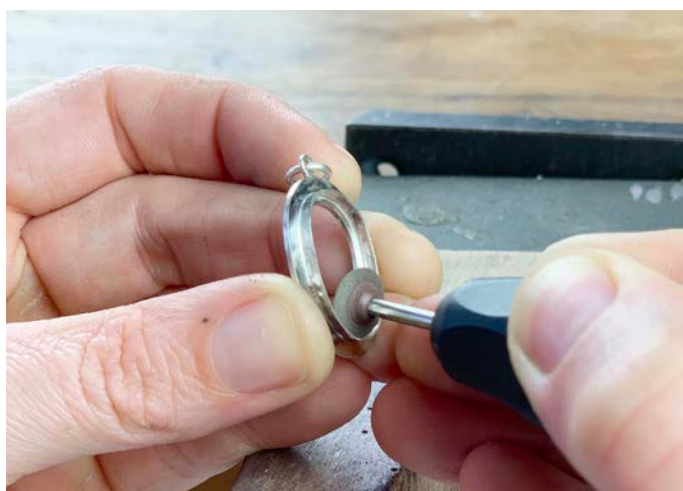
Before setting the stone, we need to polish the setting. Everything should already be sanded to 1200 grit so this should be relatively simple. I'll be polishing using my flex shaft here, using ZAM polishing compound. Make sure to wear a mask and safety glasses for this!



I'm going to use a series of knife edge rubber wheels to clean up the inside and bring it up to a nice shine. These are EVEflex brand, and I use the blue which is coarse, red which is fine (well it's called fine but I'd say it's more of a medium), and green which is extra fine.



To be used effectively, most rubber wheels need to be modified to suit the job at hand. Here I'm modifying the shape of my knife edge rubber wheel using 100 grit sandpaper so that it fits perfectly into my bezel. I'm also changing the angle of the top of the rubber wheel so that it can easily reach the base to clean up and polish.



You can see how the rubber wheel now fits perfectly into the bottom of the bezel. If you're using the same rubber wheels as me, you'll need to start out with the blue wheel (coarse), followed by the red (fine) and finally the green (extra fine).





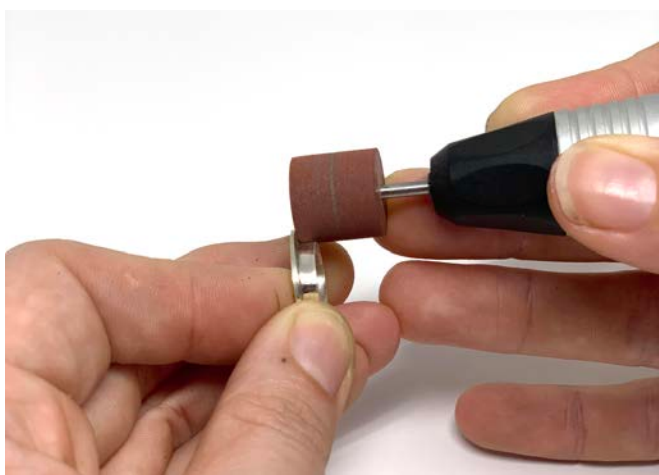
To polish the pierced out area of the back plate, there are a few options as always, but I'll be using a technique called thrumming. To start with, tie some strong string to your bench and charge it by running your polishing compound up and down it a couple of times. Most string will work for this, but the stronger it is, the less annoyed you'll get - as it won't break so often.



Now thread the string through your bezel back plate and run the bezel up and down whilst keeping the string pulled tight. Remember to keep the bezel moving from side to side as well as up and down as you do this to get an even finish.

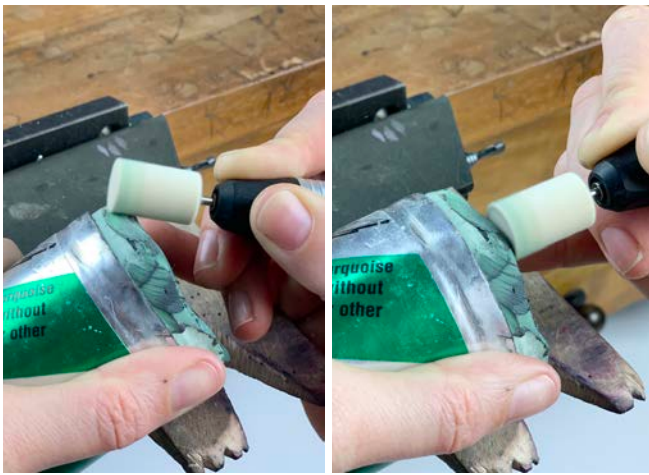


If you notice any evidence of your original bezel solder joint, you can use a medium and fine grit pumice or rubber wheel to carefully clean that up. If the edges of your rubber wheel aren't perfectly flat however, you can true it up by running it against a sandpaper stick. Remember if your tools aren't perfect then your work won't be either - don't work with rounded out rubber wheels!



Remember to keep the rubber wheel perfectly parallel to the bezel itself and be careful not to gouge the base plate!





To clean up the outside of the bezel and my border, I'm going to use a cylindrical hard felt buff to start with so that I can get right into the corners where the bezel meets the base plate - a regular polishing mop just won't reach all the way into the corners. You could also use a bristle brush for this too, and of course there are a million and one other ways that will also work.

So charge the felt by running it against your polishing compound, making sure to get polish on the top and the sides of your felt.



As you polish with your felt, you're actually polishing the border around your bezel and the actual bezel at the same time. The cylindrical portion of the felt is polishing the bezel and the flat spot on the end is polishing the base plate.

As always keep things moving if you want an even finish.



To polish the back of my piece, I love to use 3M polishing papers as they keep everything really flat. I'll start with 1200 grit, before moving on to 4000, 6000 and finally 8000 grit! But if you don't have these no drama, just take the back to 1200 grit sandpaper before the next step. The polishing papers are just my favourite thing to help keep things really flat.



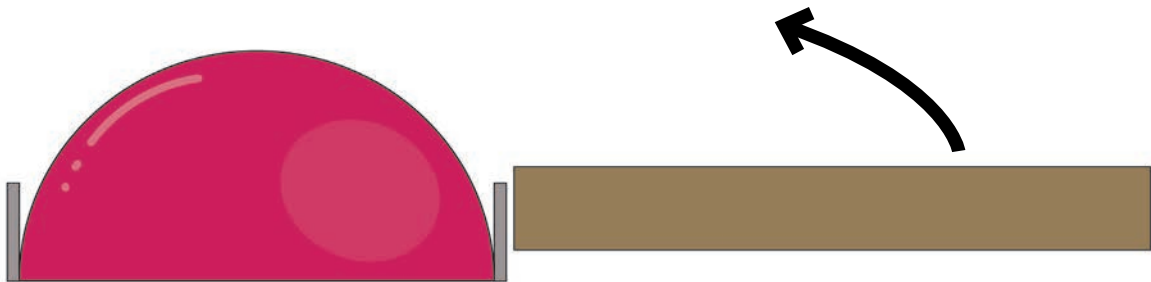
And finally, I'll use a regular polishing mop charged with ZAM. Add a little pressure as you start off polishing here and gradually release the pressure as you come to the end of the process. Remember to always keep the buff moving.

To clean your bezel after polishing, you can use an ultrasonic cleaner if you have one. If not, warm soapy water and a soft toothbrush works a treat too.

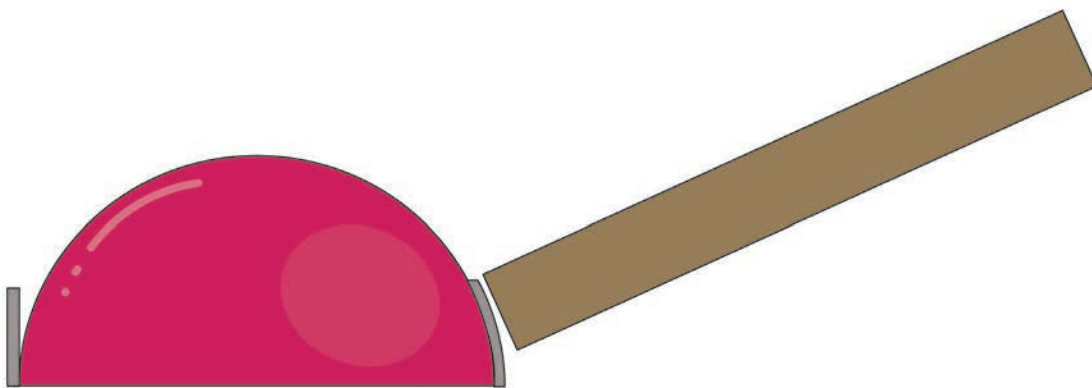


# SETTING THE STONE

There are so many tools available to bezel set stones - it's quite baffling. But here's the secret: they all do the same thing. They "rock" or push the bezel over the stone. I say rock because that's the motion used. As long as the item being used can do this job and doesn't have any sharp edges that may mark your work, then you're good to go. I regularly use a needle burnisher, a regular steel burnisher, a steel pusher, a brass bezel rocker, a chopstick, a piece of acrylic or my actual bench top to set stones in bezels. There really is no right or wrong way, as long as it works for you. Today we will keep it simple and use a bezel rocker - but don't be afraid to try things out. Always ask yourself what you want to achieve and how you can get that result. In this case we simply want to move the bezel smoothly over the stone without putting any marks on our piece.



The concept is simple. Simply start pushing the bezel over the stone at the base of the bezel and rock the bezel backwards and forwards whilst pushing the tool upwards towards the top of the bezel to secure the stone



The rocking motion should finish when the top of the bezel is in contact with the stone. It really is that simple. But let's look at it in a little more detail using a brass rocker.

## TOP TIP

If you are making a heavier gauge bezel, you can file a chamfer around the top of the bezel to make it easier to push over the stone.





Before we start setting the stone, it's important to make sure whatever tool we choose for the job does not have any sharp edges. Even though our bezel rocker is only made from brass, if it has sharp edges, it will still leave marks on our work. So when we get a brand new one, it's important to make some small modifications to remove those sharp edges.



To start with use a flat hand file (a #2 or #0 cut will be perfect) to file directly on the edge of the brass rocker on both sides to create a 45 degree chamfer along the edges that's about 0.5mm in length. We are basically just taking off the corners of any part of the tool that will be in contact with our work.



Now repeat the process with 240 and 600 grit sandpaper sticks, but this time, let your wrist rotate from side to side as you sand to really round out those edges.

You can also use the 240 and 600 grit sandpaper sticks to smoothen the surface of the rocker if there are any small scratches in there that could transfer to your bezel.

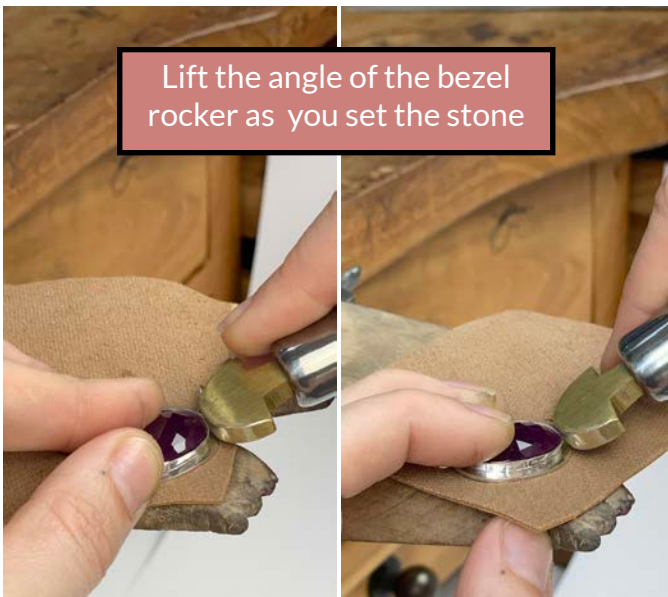
Generally, you don't want to have a bright polish on your bezel rocker - just a smooth finish. If you have a bright polish, you're more likely to slip when setting.







OK the stone is sitting nice and level in the setting, so we're ready to go! For a bezel of this gauge, we don't need any fancy work holding system. We can do it right on our bench pin. I popped a piece of leather underneath the setting just so that I don't ruin the polish with anything that might be lurking in my bench pin.



Start with your bezel rocker resting against the base of the bezel held at about 20 degrees from horizontal. Rock it back and forth as you lift that angle upwards until the top of the bezel is in contact with the stone. You can double check by looking through your loupe if you're not sure - but the top of the bezel must be in contact with the stone all the way round.

Always start setting on the tight curves first and make sure you work around the bezel in small increments to ensure a really smooth finish. I'll generally secure the top and bottom of the stone first, before setting everywhere in-between.

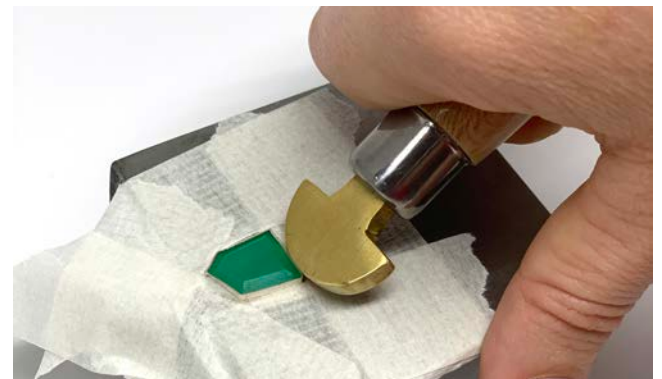


# SETTING EVIL CORNERS



Soooo you decided to be awkward and picked a stone with corners! No drama. We will use the same techniques to set this, but the important part is the order and the direction that we work in. It's very important when setting corners that the bezel isn't too high - that's when you end up with messy corners.

Don't worry, we cover making bezels with corners in the video - as well as ways to deal with the fact that sometimes our stones might be higher in some places than others.



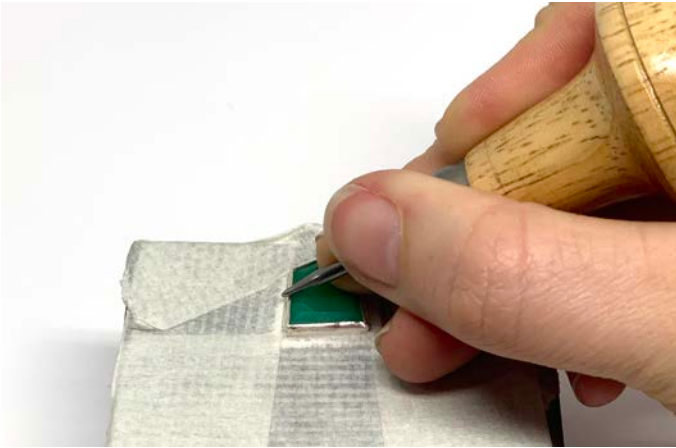
When setting stones with corners, the techniques are the same, we simply need to set the corners first. A neat little trick here when setting a stone with a border is to tape it down all the way around the border - this helps protect the stone from any scratches you might make with the bezel rocker. Start with your bezel rocker right on the corner of your stone at an angle of approximately 20 degrees from horizontal. Rock your tool away from your corner applying a very light pressure. Then repeat this on the other side of the same corner.



Lift the angle of your bezel rocker and repeat the process until the bezel is in contact with your stone, remember never to apply excessive pressure on corners - they are fragile! Once the corners are set, simply use your bezel rocker and push the bezel over on the areas in between. The corners are the hardest part to get down over the stone. These must be set first, before the metal becomes work hardened.



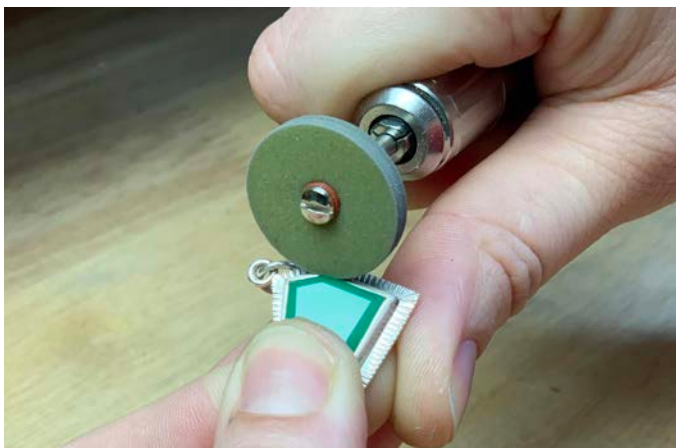
When setting a stone with corners, its a good idea to set opposite corners first just to help secure the stone in place before setting the rest of the corners, and finally finish setting the rest of the bezel.



If you're having trouble getting the bezel all the way down, especially on corners, I find using a needle burnisher here to gently burnish that final bit of metal over the stone really helps. Because the tip of the needle burnisher is so tiny, it's easier to get a little more pressure in specific areas such as corners. Simply slide the needle burnisher gently back and forth along the top of the bezel and just watch that metal move down and over the stone. Apply only a light pressure to begin with just to get a feel for it, then add a little more as necessary.

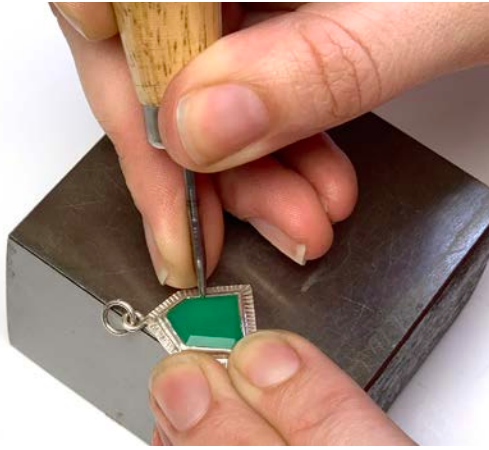
## FINISHING UP THE BEZEL

Whether making a bezel with corners or without, the techniques are the same here..... But, do not go crazy with polishing and rubber wheels here, our bezels are thin. We can very easily polish all the way through our bezels if we aren't careful - especially on corners!



To remove any marks you have in your bezel after setting (although there shouldn't be many), you can use a flat edge pumice wheel - not a regular rubber wheel as these can scratch your stones. Be careful here and do not over-use the pumice wheel. Its really easy to go all the way through the bezel - especially on the corners!





To put a nice crisp edge on the inside of the bezel, use a needle burnisher to gently burnish the inside edge of the bezel by applying just a slight outward pressure whilst keeping the burnisher moving from side to side. Be careful not to scratch the stone here, and use a stainless steel needle burnisher if you're using a soft stone - and make sure it's highly polished! Check out the Resources Section for details on how to make these.



And finally to give your piece a final polish, use a regular polishing mop charged with Zam polishing compound. Polish the bezel carefully by tracing the outline of the bezel with your polishing mop - again don't go too crazy and polish through the bezel here!!

Now just clean up with a soft toothbrush and warm soapy water and you're good to go!

“To live a creative life, we must lose our fear of being wrong”

Joseph Chilton Pearce



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