

## Making A Butterfly Spline (Or “Arikata”)

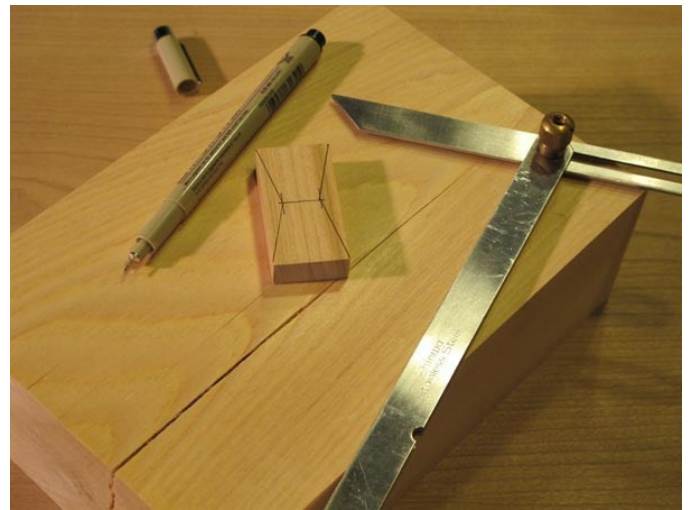
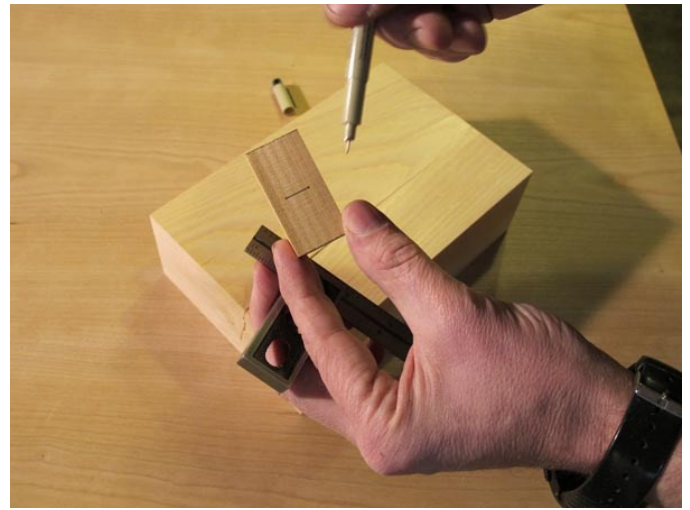


When working with wider, thicker slabs of wood, it is not uncommon to have checking (cracks) in the surface, particularly at the ends. While there are a couple of ways of dealing with this such as filling the gaps with wood or putties or epoxy, I prefer to leave it as it is, treating it as a feature instead of a flaw. A bit of honesty about the nature of wood perhaps. But in order to be sure the checking doesn't continue, it needs to be stabilized. A simple way to do this is to add an “arikata” or butterfly spline. Not only does this method keep the check from widening and lengthening, it also visually addresses the crack, showing that it was left open with intent. Arikata are fairly easy to execute and the end results look pretty cool.

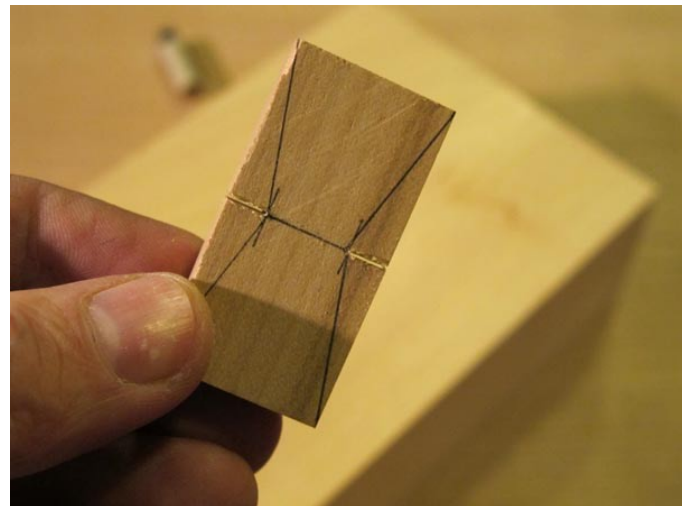
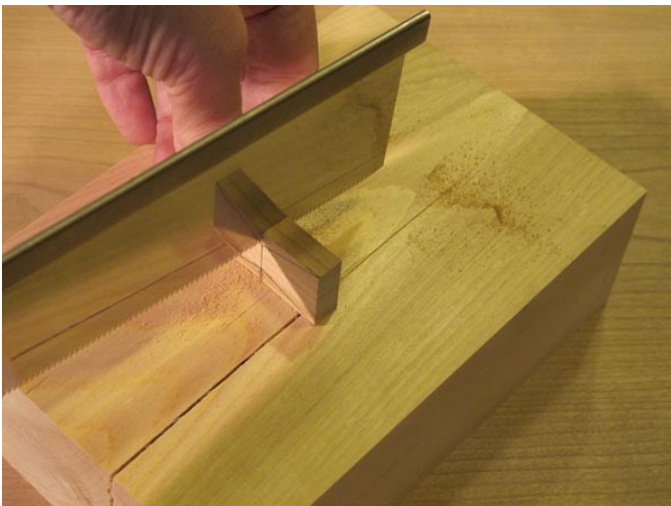
### What We'll Be Using:

- Cracked piece – Port Orford Cedar
- Spline piece – 1" x 2" x 3/8" cherry
- Sharp chisels – 1/2" and 1"
- Marking knife
- Sharp Pencil
- Router with 1/4" straight bit
- Adjustable square
- Angle gauge
- Hammer
- Glue and brush

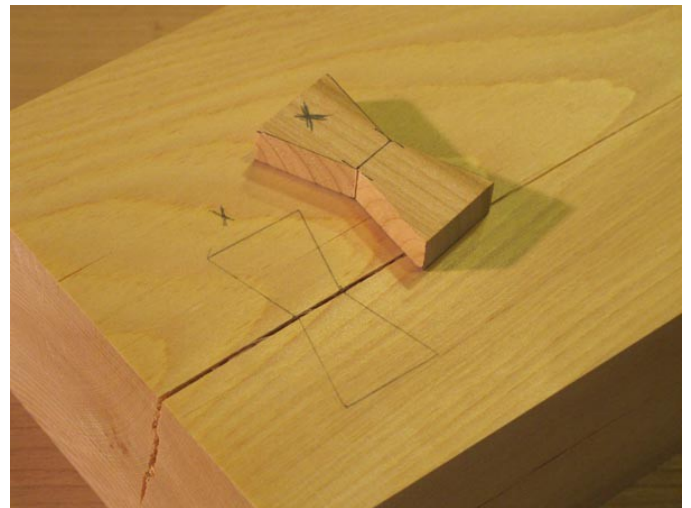
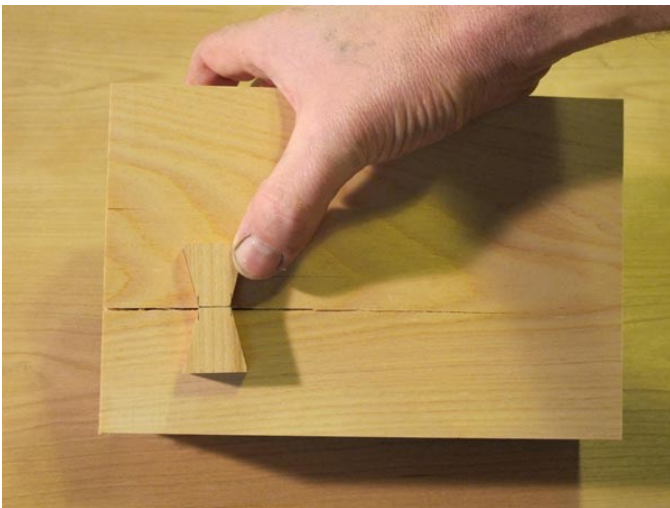
The first thing you will want to determine is how many splines you need. Since I am a form-follows-function kind of guy, I try to use as few as possible, maybe one for every three to five inches of checking. Next, decide the size. Again, since I am driven by function, I like to keep them as small as possible while still doing their job. I'll often cut a couple out of paper and lay them on the piece to find the right size. I have made them as small as 1/2" x 1" up to 1 1/2" x 3". When it comes to thickness, you want to keep it on the thin side, between 1/4" – 1/2". It doesn't require any more than that to keep a check from running and more importantly, if you are using a different type of wood for the spline it might have a dissimilar shrink/swell rate. This is especially true when using exotics like ebony or cocobolo. The thinner you make the spline, the less likely it will stand proud of the surface part of the year, and below it the rest. So enough talk, lets get it on.



Start with making the spline. I'm using a piece of cherry measuring 1" wide 2" long and 3/8" thick (it's important that the grain runs the length of the long dimension). Using an adjustable square, I mark the center of its length, and then 1/4" in from each side. Then, using an angle gauge (I knew I forgot something in the layout tools article), draw lines from the outer corners to the center marks.



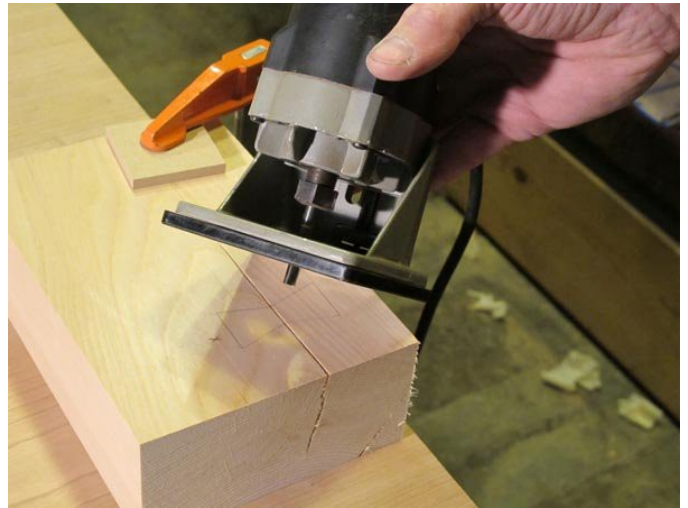
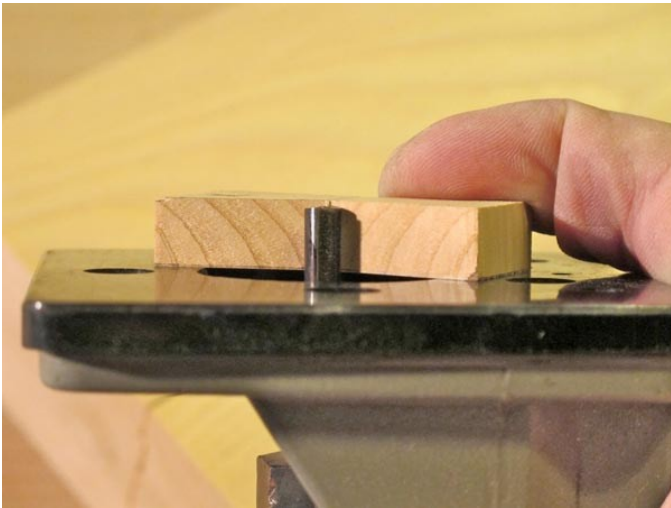




There are a few different ways to cut them out, from scroll saws to table saws, but if I only need a couple, I find this approach to be the quickest. First, I make a cut along the center line to where the angled lines meet. This is a relief cut that will make it easier to chisel out the waste. Being careful to keep your chisel

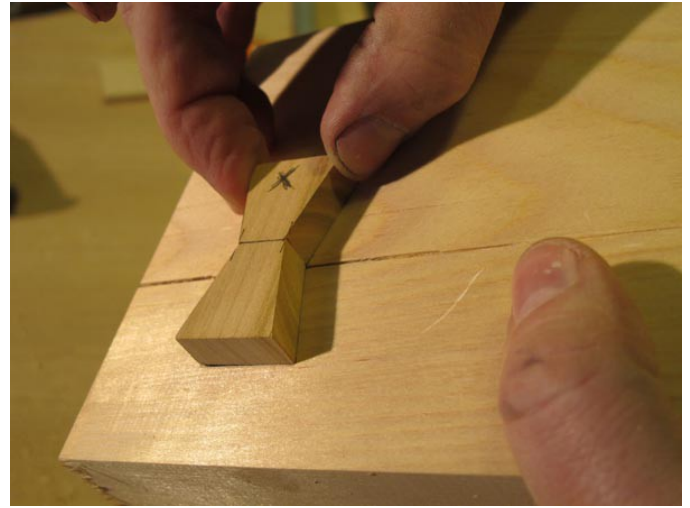
flat, take a few small shavings down one slope, then rotate and take a few from the other side. Continue taking shavings from each side until both are down to the line. Working from both directions like this helps to minimize damage if the chisel overshoots and gouges the other side. Now flip and repeat.

Once the spline is cut, determine its position along the check. For greatest strength, try to align the centerline of the spline with the line of the check. When you have it where you like it, using a sharp pencil, carefully trace the spline. Trace it only once; going over it twice will only give you fuzzy lines that will be harder to work to. If you are working on dark wood, where pencil lines are hard to see, cover the area with a wide strip of masking tape and mark on it. Before taking the spline away, put an 'X' on one end and a corresponding mark on the board to keep track of splines orientation. Since it's cut by hand, each side will be slightly different and it will only fit one way.



At this point you're ready to start "wasting" the mortise. While I could just chop it out with the chisels or use a drill press, I prefer a router. The router gives me a quick, flat bottomed hole to the exact depth I need. Because I want the spline to stand proud of the surface so it can be flushed later, I set the router bit about 1/32 below the thickness of the spline. Route the mortise staying about 1/16" in from the pencil lines. It's tempting to try to get closer to the line. Don't. One little slip up can send you back to the start to make a bigger spline.

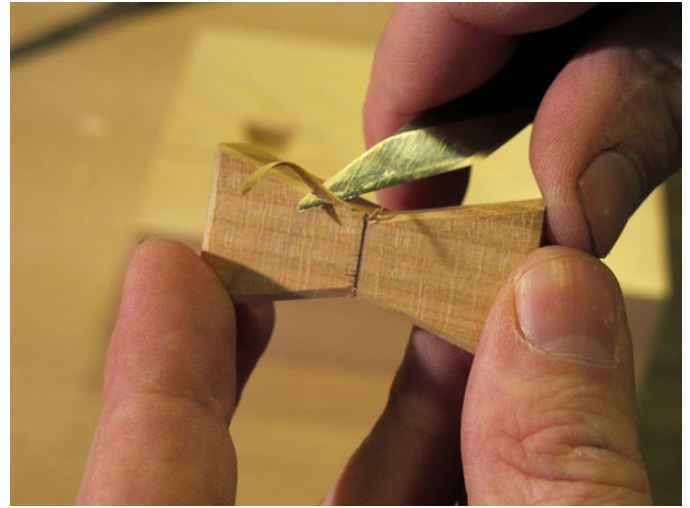
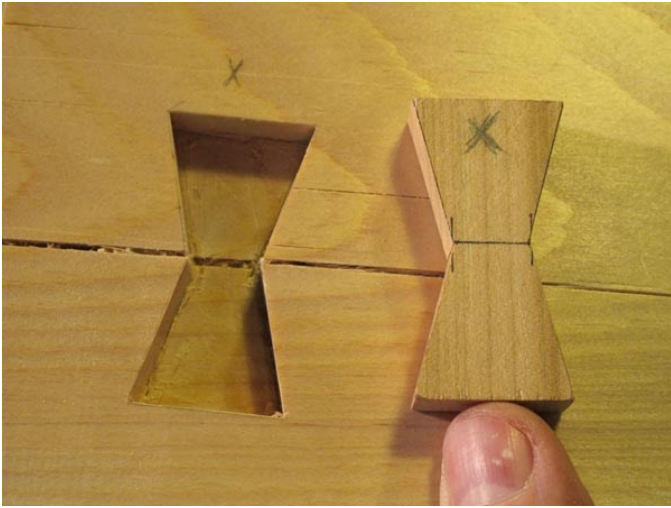




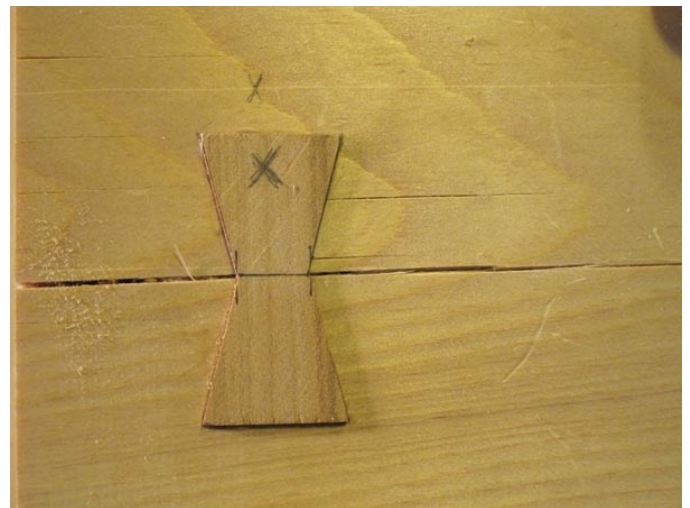
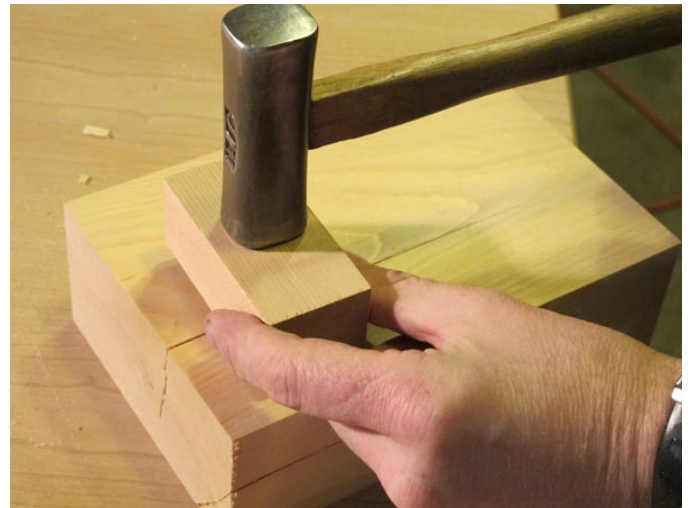
Now that the hole has been wasted, begin carefully chiseling to the lines at the ends and along one side. To get a good fit it's important that you only trim to one side. Take light, thin shavings and sneak up to the lines trying not to chisel them away. Once that is done, put the spline in the mortise and check the fit along the chiseled edges. If you notice any gaps, try to correct them now.



If it all looks good, use a marking knife to scribe lines along the unchiseled side. As with the pencil, only make one pass with the knife. When you pull the spline away you should be able to see why you chisel out one side at a time. The lines you scribed are usually inside of the pencil lines. Now chisel out the rest being very careful to work right up to the scribe lines. When all of the waste has been chiseled away, check the fit one more time. Only push the spline in a little way. If you push it too deep you might not be able to get it out. Trust that this is a lesson better read than experienced.



If the fit is good, carefully pull it out. Using a knife or chisel, chamfer (bevel) the inside edges of the spline. This will help it slide in straighter, keep from damaging the edges of the mortise and leave a little clearance in the corners for glue squeeze-out.





Using a small brush, apply a thin layer of glue to all of the surfaces of the mortise and to the bottom of the spline. I usually don't glue the sides of the spline because it all gets peeled off when it's being driven in. And less glue to clean up is less glue to clean up ('nuff said). Put the spline in the mortise and using a scrap to protect the surfaces, tap it in with a hammer. Listen as you tap it, the sounds it makes will tell you how deep you are and when you've reached the bottom.

If everything went well, the spline should be just proud of the surface and tight around the edges. When the glue has dried, all that's left is to make the spline flush. This can be done by sanding or planing. If you decide to sand, be careful not to over sand the area around the spline, especially if the spline is harder wood than the board. It's easy to make a donut-shaped hollow all around the spline. If planing, be sure to skew (hold plane diagonal to direction of cut) as you pass over the spline to help avoid tear-out.



And there you have it. A simple but cool little joint. This technique can also be used for joining boards together for tabletops etc. If a gap is desired, keep a thin piece of wood clamped between the boards while cutting the joint and then remove it before assembly.