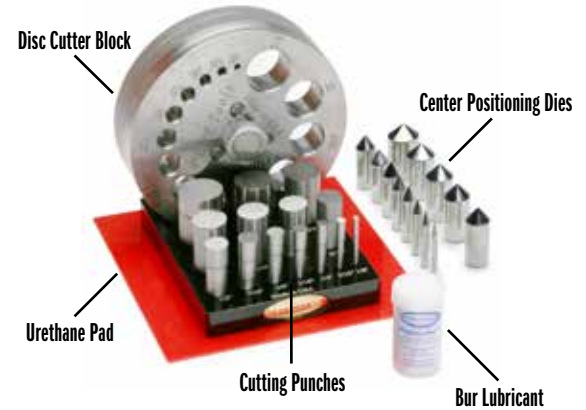
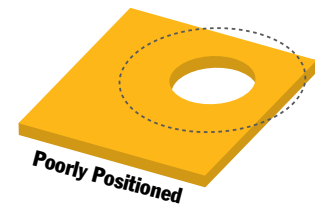
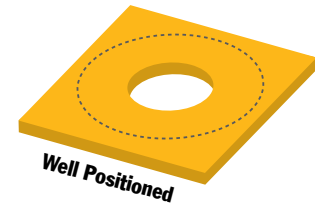


## MAKING WASHERS WITH CENTER POSITIONING DIES & DISC CUTTERS



1. Determine the size of the washer you want to make. Make note of both the exterior diameter of the washer and the interior diameter of the hole in the center. You'll be punching both diameters with your disc cutter, so make sure you have the two punch sizes you need.
2. First, you'll punch the interior hole in your washer. Position your piece of sheet metal within your disc cutter block so that there is enough space to punch out the entire washer (*figure 1*). If your block features a locking/tightening mechanism, lock your sheet metal in position.
3. If you have a urethane pad or similarly cushioned surface, place your disc cutter on it to protect the cutting end of the punches from damage. Apply a small amount of beeswax or bur lubricant to the edge of the cutting punch and place the punch in the appropriate hole of the block. Using a heavy hammer (brass works well), strike the head of the punch until it cuts completely through the sheet metal.
4. Remove the cutting punch from the block and reposition your sheet metal so that the hole you just punched is roughly centered in the hole you will use for the outside of your washer. Do not lock/tighten the metal inside the block yet.
5. Place the appropriate center positioning die into the block with the pointed end down (*figure 2*). The point of the die will automatically position your sheet metal so that the interior hole of your washer is perfectly centered within the exterior diameter hole you're about to punch.
6. Remove the center positioning die from the block and, if your disc cutter features a locking/tightening mechanism, lock your sheet metal between the two plates of the block.
7. Apply a small amount of beeswax or bur lubricant to the edge of the appropriate cutting punch and place the punch in the block. Using a heavy hammer, strike the head of the punch until it completely cuts through your sheet metal. Your complete washer will be pushed through to the bottom of the block. Remove the cutting punch and your metal from the block.



**figure 1**



**figure 2**