

## OPEN SEGMENTED TURNING

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For the purpose of this demonstration:

I am using 12 segments per ring.

All instructions are sized to a Jet Mini-Lathe

Pictures and diagrams follow:

### I. **Required items:**

1. An indexing wheel on your lathe.
2. A jig to hold the open segments.
3. A Jig or miter saw to cut the segments: note the angle on open segments is not as critical as with closed segments.
4. A Plan.

### II. **The Indexing Wheel:** If your lathe doesn't come with one you can easily and cheaply make one.

I bought an 8" by 8" by 1/4" AL . I marked the center with a center punch then marked with a compass an eight inch final diameter and a 7.5" inch outer ring and a 7" inner ring. I then marked the outer ring every 30 degrees. I offset the first mark on the inner ring 15 degrees and then marked it every 30 degrees, making a total of 24 marks, 12 on each ring. I center punched these marks and then drilled them out with a 1/4 inch drill bit. I then drilled a hole to tightly fit the center shaft of the headstock in the AL ring. I then cut the circumference of the AL plate to an 8 inch diameter.

I bought an angle iron 1/4 inch thick and 6 inches long by 4 inches high. I cut it 2 inches wide. I opened the headstock up and put a cloth above the pulleys to protect them and drilled 2 holes 1/4 inch in diameter through the angle iron. I picked the next size smaller drill bit and drilled two corresponding holes in the top metal of the headstock. I then tapped the holes in the head stock with a 1/4 inch tap so I could bolt the two pieces together.

I mounted the Index wheel on the lathe head stock, sandwiching it between a soft washer and the chuck. I used it to mark two holes on the angle iron, one for the inner ring and one for the outer ring of holes. The holes must be lined up vertically. I removed the angle iron and drilled two corresponding holes in it so a pin could reach from one to the other and lock them together.

### III. **The Jig:** I welded a 5/8 diameter rod, 4 inches long to the center of a metal plate with 4 holes around its perimeter, 2 on each side. To hold the rod at right angles to the plate I first drilled and tapped a 1/4 inch hole through the rod and drilled a hole in the center of the plate. You could just as easily use a C Clamp to hold them together. I cut an 8 inch long Iron plate, 2 inches wide and 3/16 inch thick to fit over the plate and drilled holes in it to match the ones in the metal plate and then screwed the two together.

I cut an 8 inch long piece of Al 1 inch wide to slide along the top of the Al angle iron.

- IV. **Table Saw Jig.** To cut the segments I took a piece of plywood about 2 feet long and attached it too 2 runners that fit tightly in the parallel miter tracks. I then measured and marked a line across the plywood's length at (90 degrees – 15 degrees=75 degrees) to make the right 15 degree angle cut on the segments. I then made an initial cut into the jig with the saw blade marking the zero length. I measure the segments from this mark to a stop block for repeatability. See picture attached.
- V. **A Plan.** I used to use a piece of circular graph paper marked in 12 divisions and actually measure the outer diameters with a divider on the paper. Then I went to a book of segmented turning angles, you can get one on the internet. Then I decided to use a software program, after trying several I bought Woodturner Pro on the internet for \$70. I make the plan entirely with this program.

The following pages have diagrams of the parts and pages from the software.