

SEGMENTED VESSELS

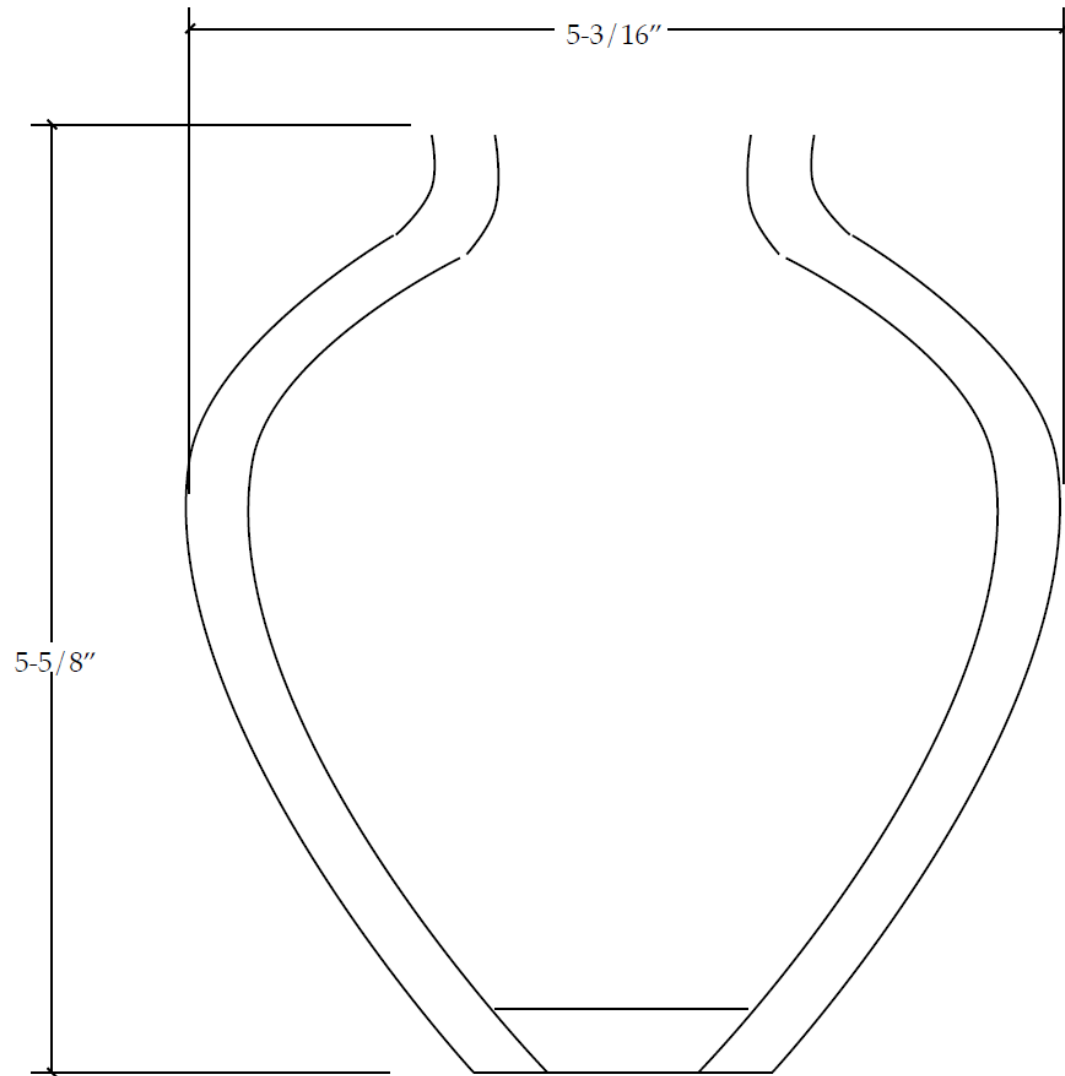
Major Steps

- Design
 - Draw shape outline
 - Place ring layers
 - Measure Segment ring inside and outside diameters
 - Compute segment sizes
- Make Rings
 - Prepare stock
 - Cut segments
 - Prepare segments for glue up
 - Glue up half rings
 - Glue up full rings
 - Fabricate the vessel
- Make the top and bottom of the vessel
 - Glue the rings to form the vessel top and bottom
 - Rough turn the outside without gluing
 - Turn, sand and finish the insides
- Glue the halves together, final turn the outside, sand and finish

Vessel Plan View

1. Draw the shape

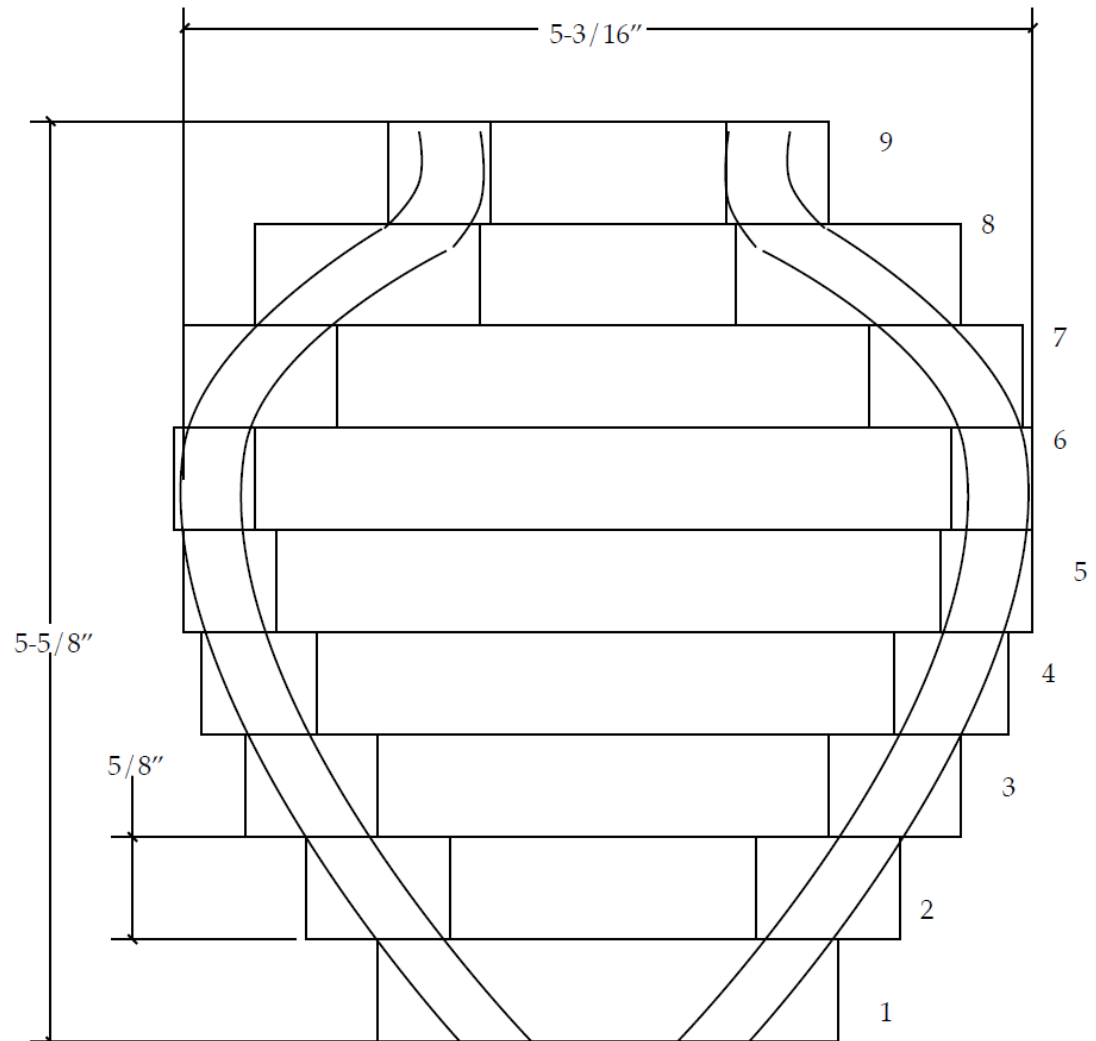
Make the wall thickness
~1/8" oversized



Vessel Plan View

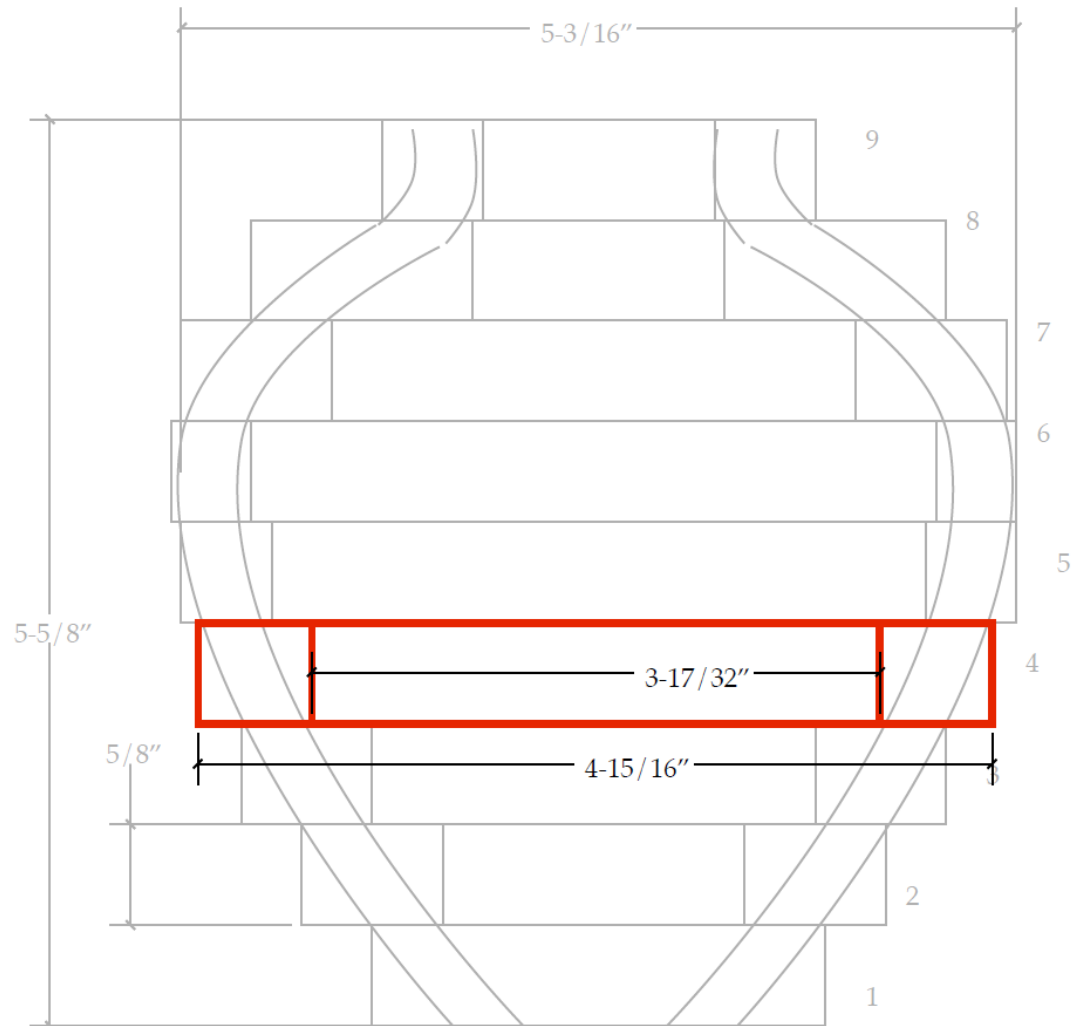
1. Draw the shape

2. Draw the ring
thicknesses and number
the rings



Vessel Plan View

1. Draw the shape
2. Draw the ring thicknesses and number the rings
3. For each ring, measure
 - Inside Diameter
 - Outside Diameter

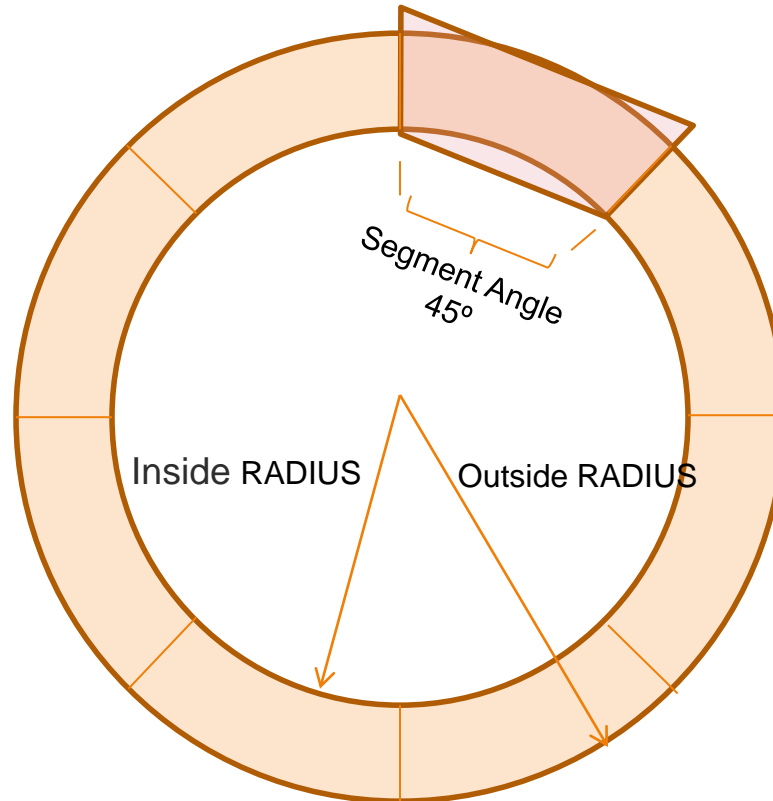


Decide how many segments are each the ring

What we know

- Number of Segments in Ring
- Inside Diameter
- Outside Diameter

• Segment Layout

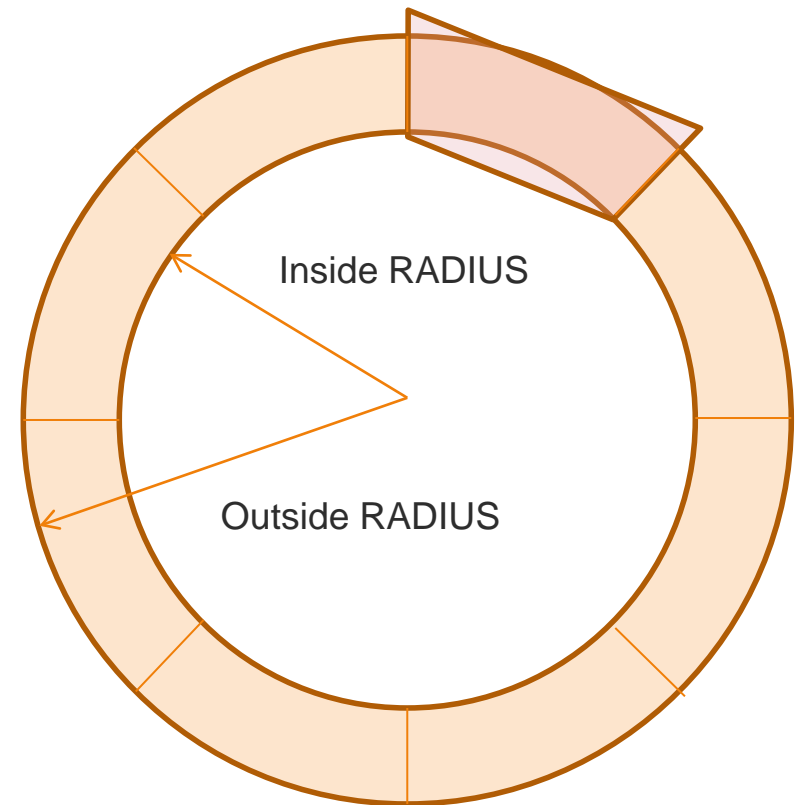
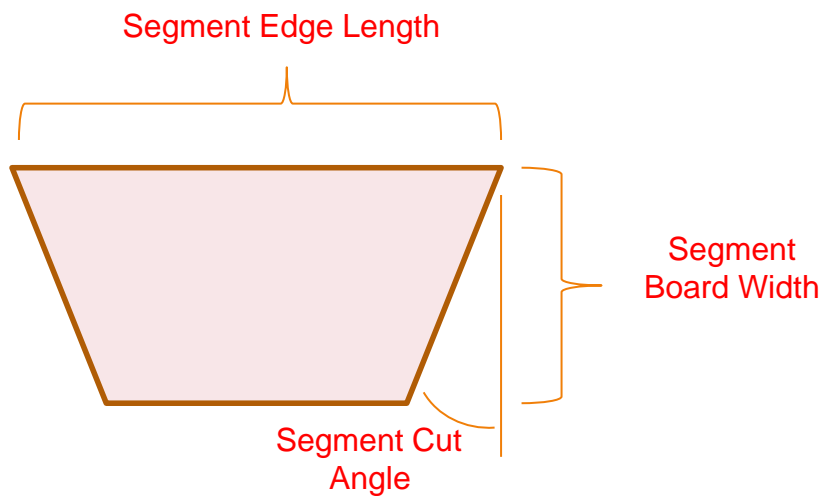


Caution: Do NOT mix up Radius and Diameter!!

- What we NEED to know

- Segment size

- Length and Width
- Segment Cut Angle



Segment Cutting

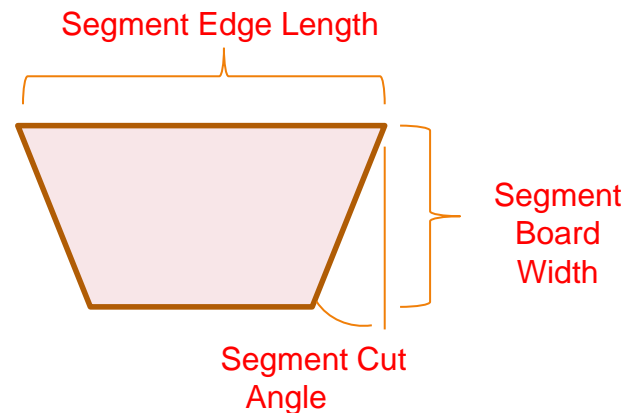


- Set saw to **CUT** angle
- Set saw stop to Segment Edge Length
- Alternate cutting segments by flipping stick over

Also nice to know is how long a stick you need to cut all the segments?

Segment Sizing Calculator

Ring #	Column1	# of segments	Segment Height	Outer Diameter	Inner Diameter	Segment angle	Cut angle	Segment Board Width ¹	Segment Edge Length ²	Segment Board Length ³	# of pieces to cut
1	Walnut	0	5/8	2.8125	0	0.0	0.00	1 13/32	0	square	1
2	Cherry	8	5/8	3.625	1.875	45.0	22.50	31/32	1 17/32	15.5	8
3	Cherry	8	5/8	4.375	2.75	45.0	22.50	29/32	1 13/16	18	8
4	Cherry	8	5/8	4.9375	3.5313	45.0	22.50	25/32	2 1/16	20.5	8
5	Cherry	8	5/8	5.1875	4.0625	45.0	22.50	21/32	2 5/32	21.5	8
6	Walnut	8	5/8	5.25	4.25	45.0	22.50	19/32	2 3/16	22	8
7	Cherry	8	5/8	5.125	3.25	45.0	22.50	1 1/32	2 1/8	20.5	8
8	Cherry	8	5/8	4.3125	1.5625	45.0	22.50	1 15/32	1 13/16	16.5	8
9	Walnut	8	5/8	2.6875	1.4375	45.0	22.50	23/32	1 1/8	13	8



Example Segment Sizing Spreadsheet

NOTE: BE SURE NOT TO CONFUSE RADIUS AND DIAMETER

Segment #	Column1	# of segments	Segment Height	Outer Diameter	Inner Diameter	Segment angle	Cut angle	Segment Board Width ¹	Segment Edge Length ²	Segment Board Length ³	# of pieces to cut	Segment Placement ⁴
1	Walnut	0	3/4	3.25	0	0.0	0.00	1 5/8	0	5.5	1	
2a	Cherry	16	5/8	4.25	2.0625	30.0	15.00	1 1/4	1 5/32	13	8	2 7/32
2b	Cherry	24	5/8	4.25	2.0625	15.0	7.50	1 5/32	9/16	6.5	2	2 5/32
3a	Walnut	16	3/16	4.375	3	30.0	15.00	29/32	1 3/16	9.5	4	2 9/32
3b	Walnut	24	3/16	4.375	3	15.0	7.50	3/4	19/32	9	6	2 7/32
4a	Cherry	16	5/8	5.25	3.25	30.0	15.00	1 1/4	1 7/16	15.5	8	2 23/32
4b	Cherry	24	5/8	5.25	3.25	15.0	7.50	1 1/16	23/32	6.5	2	2 21/32
5a	Walnut	16	3/16	5.375	4.0625	30.0	15.00	31/32	1 15/32	11	4	2 13/16
5b	Walnut	24	3/16	5.375	4.0625	15.0	7.50	3/4	23/32	10	6	2 23/32
6a	Cherry	16	5/8	6.125	4.3125	30.0	15.00	1 7/32	1 21/32	17.5	8	3 3/16
6b	Cherry	24	5/8	6.125	4.3125	15.0	7.50	1	13/16	7	2	3 3/32
7a	Walnut	16	3/16	6.25	5.0625	30.0	15.00	31/32	1 11/16	12	4	3 1/4
7b	Walnut	24	3/16	6.25	5.0625	15.0	7.50	11/16	27/32	10.5	6	3 5/32
8a	Cherry	16	5/8	6.875	5.1875	30.0	15.00	1 7/32	1 27/32	19	8	3 9/16
8b	Cherry	24	5/8	6.875	5.1875	15.0	7.50	15/16	29/32	7	2	3 15/32
9a	Walnut	16	3/16	7.0625	5.8125	30.0	15.00	1 1/16	1 29/32	12.5	4	3 21/32
9b	Walnut	24	3/16	7.0625	5.8125	15.0	7.50	3/4	15/16	11	6	3 9/16
10a	Cherry	16	5/8	7.625	6	30.0	15.00	1 1/4	2 1/16	21	8	3 31/32
10b	Cherry	24	5/8	7.625	6	15.0	7.50	15/16	1 1/32	7.5	2	3 7/8
11a	Walnut	16	3/16	7.75	6.5625	30.0	15.00	1 3/32	2 3/32	13.5	4	4 1/32
11b	Walnut	24	3/16	7.75	6.5625	15.0	7.50	23/32	1 1/32	11.5	6	3 15/16
12a	Cherry	16	5/8	8.125	6.625	30.0	15.00	1 1/4	2 3/16	22	8	4 7/32
12b	Cherry	24	5/8	8.125	6.625	15.0	7.50	7/8	1 3/32	7.5	2	4 1/8
13a	Walnut	16	3/16	8.25	7.125	30.0	15.00	1 3/32	2 7/32	14	4	4 9/32
13b	Walnut	24	3/16	8.25	7.125	15.0	7.50	11/16	1 3/32	12	6	4 3/16
14a	Cherry	16	5/8	8.5	7.1875	30.0	15.00	1 3/16	2 9/32	23	8	4 13/32
14b	Cherry	24	5/8	8.5	7.1875	15.0	7.50	25/32	1 1/8	7.5	2	4 5/16
15a	Walnut	16	3/16	8.625	7.4375	30.0	15.00	1 5/32	2 5/16	14.5	4	4 15/32
15b	Walnut	24	3/16	8.625	7.4375	15.0	7.50	3/4	1 5/32	12.5	6	4 3/8
16a	Cherry	16	5/8	8.625	7.5	30.0	15.00	1 1/8	2 5/16	23.5	8	4 15/32
16b	Cherry	24	5/8	8.625	7.5	15.0	7.50	23/32	1 5/32	7.5	2	4 3/8
17a	Walnut	16	3/16	8.625	7.5625	30.0	15.00	1 3/32	2 5/16	14.5	4	4 15/32
17b	Walnut	24	3/16	8.625	7.5625	15.0	7.50	11/16	1 5/32	12.5	6	4 3/8
18a	Cherry	16	5/8	8.625	7.4375	30.0	15.00	1 5/32	2 5/16	23.5	8	4 15/32
18b	Cherry	24	5/8	8.625	7.4375	15.0	7.50	3/4	1 5/32	7.5	2	4 3/8
19a	Walnut	16	3/16	8.5	7.375	30.0	15.00	1 1/8	2 9/32	14	4	4 13/32
19b	Walnut	24	3/16	8.5	7.375	15.0	7.50	23/32	1 1/8	12.5	6	4 5/16
20a	Cherry	16	5/8	8.4375	6.5	303.0	151.50	3 1/4	#N/A	-25	8	4 13/16
20b	Cherry	24	5/8	8.4375	6.5	15.0	7.50	1 3/32	1 1/8	7.5	2	4 9/32
21a	Walnut	16	3/16	7.875	6.1875	30.0	15.00	1 5/16	2 1/8	13.5	4	4 3/32
21b	Walnut	24	3/16	7.875	6.1875	15.0	7.50	31/32	1 1/16	11.5	6	4
22a	Cherry	16	5/8	7.5	3.875	30.0	15.00	2 3/32	2 1/32	18.5	8	3 29/32
22b	Cherry	24	5/8	7.5	3.875	15.0	7.50	1 29/32	1	7	2	3 13/16
23a	Walnut	16	3/16	5.6875	2.875	30.0	15.00	1 5/8	1 17/32	10.5	4	2 31/32
23b	Walnut	24	3/16	5.6875	2.875	15.0	7.50	1 15/32	3/4	9.5	6	2 7/8
24a	Cherry	16	5/8	5	2.1875	30.0	15.00	1 19/32	1 11/32	14	8	2 19/32
24b	Cherry	24	5/8	5	2.1875	15.0	7.50	1 15/32	11/16	6.5	2	2 17/32
25	Walnut	0	3/4	3.375	0	0.0	0.00	1 11/16	0	5.5	1	