

Making Bowls Fly

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This demo covers making bowls from parallelograms—a four sided figure with opposite sides parallel.

This demo is all about turning air and coming up with bowls that fly!

Shapes/styles



Square

Results in bowl where all wings are identical
Easiest to do, turning the least amount of air



Rectangle

Long bowl with two identical wings
Turning the most amount of air for greatest time/distance



Rhombus

Two main corner wings, with two minor wings
More air at main corners, but less air than rectangle once get in farther



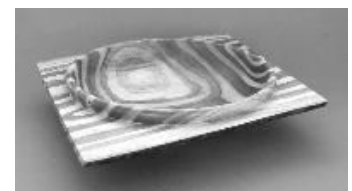
Rhomboid

Two main wings and two points
Secondary wings rarely will curve out depending on angle of sides and length
Even more air at main corners than rhombus, but less air than rectangle once get in farther



Natural

Take half log section directly from chain saw and use that shape
Two sides are natural edge, with or without bark
Typically works best for flat wings



Methods

Two methods for turning non-round shapes

Waste wood method

- Glue on waste blocks to fill out square so you do not turn air
- Requires clean edges on blank for gluing on the waste blocks
- Can be less sanding with this method, especially for beginners
- Turns like normal bowl

Natural method

- Start with non-round shape from beginning
- Great if you are impatient and want to turn
- This is the method I use

Stock Prep—Determine Wing Shape

Decide on shape you want to produce

- Square is easiest for first time (least air)
- Natural is quickest prep as there is no sawing

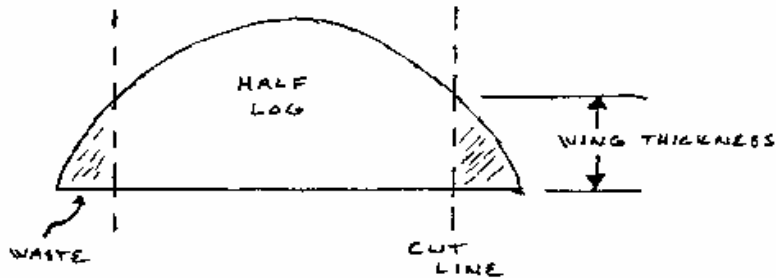
Determine wing shape and location

- Straight
- Curve up/down
- Top/middle/bottom of bowl



The wing thickness/location determines how much of the bowl blank needs to be square

- This will maximize the size of the bowl you can make from a blank
- Entire blank does NOT need to be square



Stock Prep—Cutting the Blank

Cut one straight side on blank

- For square, any side can be the first side
- For rhombus, I like to use the end grain sides as the angled sides
 - So the first side is with the grain
- Do not cut to final thickness yet

Use first side against miter fence to cut 2nd straight side

- For rhombus bowls, I use an angle of 70-75 degrees—just an angle that I think has best balance.
- Smaller angle results in very extreme points/wings
- Larger angle and the bowl is more square
- This is a great area for experimentation
- Now have two sides straight

Now use wing thickness to determine how far in you need to cut opposite sides

- Set saw fence accordingly and cut opposite sides
- Using freshly cut side against fence, repeat process for original two sides

NOTE: To get equal length sides for the rhombus, make sure you measure the length on the edge of the wood and not the distance from fence to blade when making angle cuts—otherwise you will probably cut the blank too short!

Mounting on lathe

Find center on both sides

Squared end is easy—draw lines between points

If other side is not flat, hold blank against straight edge and measure distance to center from straight edge and transfer this to other side

Mount between centers with top facing the tail stock

The way I do these pieces is to double chuck them

Chuck via the top to do the bottom

Chuck via the bottom to do the top

This is done so we can get the tailstock out of the way

Can do these without the chuck point on the top

To do that I must mount between centers with bottom at tailstock and turn entire bottom between centers

Harder to work bottom and sometimes limit wing design

Seems to work easiest for rectangle bowls, since wings extend out farther

Safety Tips Before Turning

Always test spin piece prior to turning lathe on

Double check to make sure piece won't hit tool rest or banjo

Keep fingers and hand out of reach of the wings

No flaws in wood near wings

Easiest place for pieces to fly off (remember they are wings!)

Eye protection as usual

Cutting top tenon

Flatten the top

Take light cuts from outside edge to center

Rubbing the bevel, but not a lot of wood to rub on so don't push into the wood

Tool rest hand should just keep tool on tool rest

If having hard time seeing edge, put dark color on bed ways, light from above, look down from top.

Put tenon on top side

If don't have much wood to work with, this tenon can be cut into the wood instead of out of the wood

It is possible to do these pieces with faceplates, but must be careful to get the mounts exactly centered or symmetry of wings will be off

Waste removal and initial form

Reverse onto top tenon, bring up tailstock for support

Can attack from multiple ways

Work wings first, work bowl first, or work both

I typically start to waste away area up to the wing thickness

Make cuts from outside edge to solid area of blank

Get rid of waste material down to wing thickness

Rough shape the outside of bowl and put tenon on bottom

Make your cuts from the bottom to the top

Tail stock will be a bit of a limiting factor, go as far as you can for now

NOTE: do not shape to final form—final form is not set until wings are cut

At this stage, piece should be running balanced, so we can remove the tailstock as it is in the way for the refining cuts

Forming wings and final bowl form

Start forming the wings

Single curves tend to be easier to form and sand (as opposed to compound “S” curves)

Cut like a cove—outside in for one half, inside out for other half

Look down from top to see exactly where tool is.

As you make cuts from bowl to the wing, begin blending bowl portion into the wings

May need to re-cut bowl all the way from the bottom to the wing

When shaping outside of bowl the tendency is to not cut in far enough

If you don't cut in enough the bowl will be shallow

NOTE: Never cut a wing curve that has a smaller radius than your smallest sanding tool

These curved areas are the most likely place to have ridges and tool marks

Want to be able to power sand them in some way

1” radius is great for first time as your 2” sanding disc will work great

As you cut deeper in the wing you may need to switch to a gouge with a steeper bevel so you can make the corner

If can't get curve with gouge, use a scraper, preferably a negative rake scraper

Negative rake scraper has bevel on both edges, but only one is sharpened each time

Less grabby, cleaner cuts, especially right after sharpening

Want outside of bowl to seamlessly blend into the wings

No abrupt meeting or change of direction

Sand the bottom

Now is the time to do the sanding on the bottom

Sand trouble spots with lathe off, then power sand with lathe on

Can hand sand with lathe OFF

Do NOT hand sand with lathe on

BE AWARE OF THE WINGS!

Power sand wings with lathe on or off

Depends on diameter of curve, if curve is too tight, will have to do with lathe off

If you sand with lathe on, make sure you reverse the lathe on every grit or on every other grit so you wear the sides of the wings evenly

Turning the top/inside

Reverse chuck on the bottom tenon

Bring up tailstock for support

Work wings first

Match the bottom curve, if need help, first draw curves on the wings

Use dark lines, you will see them as piece spins

These bowls are easier if you keep the wing/bowl thickness thicker, i.e. greater than ¼ inch.

I typically go for 3/8 inch thickness

There will be less wing vibration, less tool bounce

Maintain the wing thickness on the flat portion (the square part of the bowl)

Once wings are done, you can start hollowing the bowl

I like to keep tailstock in place until it gets in the way, then remove it and finish hollowing

When hollowing, you want to maintain the thickness of the flat portion of the outside edge

Once get into the main part of bowl, the rest is basic bowl turning

Thickness of the bowl should be the thickness of the wings

Beware of making the turn at the bottom of the bowl

Switch to gouge with steeper bevel as you get to bottom if can't make the curve

When done, sand inside using same techniques as used on outside

Turning off bottom tenon

Three primary ways of finishing the bottom

Jam chuck

Vacuum chuck

Reverse onto waste block w/tailstock support

Jam chucks don't typically work on these bowls as the bowl sides are sloped too much to fit snugly on a jam chuck

I use both vacuum and reverse chucking

Vacuum great if want to work unobstructed and get final piece done on the lathe

Reverse chucking using waste block is simple and cheap

Turn disc shape, roughly the size of the bottom of your bowl

Give it a curved edge, concave center

Mount bowl onto this with a piece of leather between waste block and bowl

Leather protects wood and gives more friction

Use tailstock to support

Do any last refinements to outside shape if needed

Form foot of bowl

Do any finish sanding not already done

Turn tenon down to about ½ inch diameter

Cut tenon with backsaw

Use rotary tool to carve off remaining tenon

Sand foot