# Base Options

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Part of

# The SegMaster Series

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Written By

# The SegMaster

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# Base Options

If you think that bowl bottoms are all made up with a single block of wood at the bottom of the bowl, think again. This will work for you up to a bottom diameter of about 5 inches. Any larger than that and you run a good chance of having your bowl split.

The problem is that wood moves and changes size due to humidity, drying and other factors. The problem is that this expansion is different along the grain than it is across the grain. A solid bottom will thus expand more in one direction than in the other. To make matters worse, the grain of a segmented bowl runs around the walls of the bowl or other turning.

In his excellent book, *The Art of Segmented Woodturning* by Malcolm Tibbetts he discusses this problem and two ways to solve it: *Tapered Plugs* and *Floating Disks*. I highly recommend this book. I have several books, and this is the one I refer to most.

I have developed a couple of variations on technique for *Floating Disks* as well as my own technique that I call the *Star Bottom.*

## Solid Bottoms

This is by far the simplest and easiest bowl bottom to use. I have read that these are not a problem up to a base diameter of about five inches. This means that either one must limit one's bowl making to smaller bowls or to bowls that are at least very small at the bottom. This is often impractical.

Making a small, solid bottom is easy. Take a square of wood, round it and glue the segmented rings to it.

That is really all there is to it.

## Tapered Plugs

Rather than having a single piece base for a medium sized bowl, Tibbetts suggests a segmented ring surrounding a tapered plug. This is a compromise between a one piece solid base and the *Floating Panel* base that has its own disadvantages.

Another advantage of a tapered plug is that it avoids having to deal with end grain at the base of the bowl.

Select a very stable wood for the plug that does not expand or contract much. Turn this to a disk of approximately the correct size. I suggest attaching this to a waste block using a waste ring. The block and ring should have a smaller diameter than the tapered plug. Turn it so that there is a slight taper to the edge.

TBD Photo of waste ring and tapered block.

Next, make your segmented ring. Smooth both sides and mount it onto the lathe using Cole Jaws, clamping from the outside of the ring. Use 6mm x 16mm flat head screws to grip the ring rather than the rubber bumpers that came with the Cole Jaws Turn the inside so that it is round, clean, and slightly smaller than your plug. TBD Photo.

Remount the bottom onto the Nova Chuck using either regular jaws or Cole Jaws, but this time on the inside. Round the outside. TBD Photo.

Put the base back onto the Cole Jaws. This time consider using the rubber bumpers to avoid marring the ring. Mount the plug onto the tail stock using a tail stock adapter (TBD Photo of adapter).

Slowly and carefully, cut away from the inside of the ring to match the taper and diameter of the plug. When the size is right, glue the plug into position. Note that you don't have to get the plug perfectly flush with the base. You will most likely be carving a bit into this base from one side for the inside bottom of the bowl. If the base goes in ⅛" too far, this can be on the inside of the bowl. If it is a bit "proud", it can go on the outside of the bowl.

After the glue cures, use a cut-off tool to separate the plug from its waste block. TBD Photo

Glue another waste block onto the base. Leave the base in the Cole Jaws and on the lathe while you do this. Use a tail stock adapter to hold the waste block as you glue it onto the base. This will keep everything perfectly centered. TBD Photo of assembly.

## Floating Panel Bottom

A *Floating Panel Bottom* uses a segmented ring with a channel on the inside. A panel resets inside this channel in such a way that it changes size independently from the ring in which it sits. He suggests making the grooves deep enough and the panel wide enough so that the panel cannot drop out and using a bit of hot melt glue to fasten the end grain edge of the disk to the interior of the ring.

The advantage to this type of bottom is that there is no way that base distortion will crack your bowl. The disadvantage is that there will be an open crack around the perimeter of the panel. I don't like this, but I live with it on large bowls. The other thing I don't like is that the inside of the bowl is completely flat on the bottom. It is difficult to create a smooth joint between the base and the walls of the bow.

### Tibbetts Method

The *Floating Panel Bottom* starts out the same way as the *Tapered Plug* technique. Round the inside and outside of the ring. This time leave a lip of a quarter inch of so thick on the inside and with a shelf of a quarter inch as well.

Create a thin panel to go into this depression. I make mine between 3/16" and ¼". Make it just larger than the hole in the base so it can't fall through. Hot Melt Glue the edge with the end grain.

Turn a wider shelf above the panel. You will place a ring into this shelf to hold the panel in place. The shelf must therefore be high enough so that this ring can rest on and touch the shelf. There should be a slight taper on the edge.

Make the holding ring that will secure the panel. It should be slightly larger than the hole and have tapered edges. Use ¾" wood for this, even though most of it will be turned off. This ring will have to be made while it is on a waste block or waste ring that is slightly smaller than the holding ring itself. Be sure to cut a smooth and clean round opening into the center of the holding ring. Sand it now. You will not be able to sand it without tearing up the panel once it is in place.

Slowly enlarge the hole in the base until the ring just fits into it. Apply glue sparingly onto the edges (only the edges) and glue the ring into position.

When the glue has cured, cut the waste block / ring from the holding ring and trim the holding ring down so that it flush with the base. That is the base of your bowl. Mount this to a block with a waste ring on it.

Sounds tedious and difficult to me. I find it difficult to get tapers and diameters exactly right. In this case, it is particularly difficult since both must be perfect at the same time. I also don't like that I have to create a complete segmented ring that I will mostly be converting into shavings.

I have developed a couple of alternatives.

## Simplified Floating Panel

This is a variation on Tibbetts' method. I start with the segmented base and secure it to a waste ring. TBD Photo. Turn a hole of the desired diameter on the inside. Make this ¼" deep and leave a shelf on it a quarter inch wide. Sand the inside of this hole now; you will not be able to do so again without damaging the panel.

Next, place a panel into this opening. Again, the panel should be large enough that it will not fall through. The panel should be just shy of the edge of the segmented ring. Use hot melt glue on the ends to hold it into position.

Prepare the first ring that will go onto this base. This ring must be small enough that it will hold the panel in place once it is glued. Sand the inside of this ring; you will not be able to sand it later without damaging the panel.

Mount the base to the spindle side of the lathe. Use a tail stock adapter and Cole Jaws to mount the first ring to the tailstock side of the lathe. Carefully apply glue to the base and to the first ring. Be careful to avoid getting glue onto the panel. Bring them together and let the glue cure.

Remove the Cole Jaws. When you turn this first ring, you will turn the inside so that it is within ⅛" to ¼" of the panel. In other words, you will leave a lip there. This lip will hold the panel in place.

I have found this technique to be faster and less "picky" than the Tibbetts method.

## Panel in Two Part Base

Perhaps the easiest and simplest method of doing a floating panel is to cut the base in half and insert the panel into it.

1. Build the base ring from segments as normal. Glue and smooth it.
2. Put the base onto the lathe and round both the inside and outside. Sand the inside since sanding after assembly will almost certainly scratch the center panel.
3. Use a router and bit to cut a ⅜" deep slot ¼" thick into the center of the ring.
4. Clamp the base to a square sled and cut it in half in the middle.
5. Place a panel into the slot, using hot melt glue to secure the open-grain ends of the panel.
6. Glue the two halves of the base ring back together.
7. Sand the base ring smooth.
8. Glue the base to a waste block and build the bowl onto the other side of that base.

TBD Photos of every step.

There are a lot of steps, but they are all quick and easy.

## Star Base

This is my own invention. It is a lot of work, but I think it makes the prettiest base. I call it the *Star Base*.

At one point, I considered making a base from a segmented ring with no center hole. In other words, the bottom would be pieced together with segments that are pointed at one end. The problem with this would be strength. If there was and impact applied to the bottom of the bowl, the bottom could break along the grain lines.

So, I kept the basic idea, but put pieces between the segments with the grain running from the center out to the edge. In some versions, one stick might go all the way through for additional strength.

Yeah – yeah, I know. Never mix grain directions. But in this case, I figure that the pieces are relatively small. Besides, I have used this for quite a few bowls over the years and so far, they are all holding together. And they all look great.

So, the next question is how to build them.

I use a gluing jig.

First step is to cut the pieces. I use a standard segment cutting sled to cut segments from a 3 ½" wide piece of wood, ¾" thick. The segments will be cut such that they end in a point.