# *Salturn*, a Saltshaker

Keith Gotschall

I call this project a *salturn: sal* for salt and *turn* because it is turned. Years ago, I came across the idea made in ceramic and adapted the design for wood. I have been making and demonstrating salturns since 1999.

To use, the shaker is filled through the bottom hole and turned over; a vigorous shake up and down dispenses the contents out the same hole. The shaker can be passed around the table without spilling—a side-to-side motion will not dispense what's inside. There are no holes on top and the hole on the bottom is covered when the dispenser is sitting upright, so the ambient moisture is less likely to affect the contents.

The design of salturns is limitless, as long as the interior shape is followed. The size is optional as well, but I find that the dimensions discussed work well. A large container tends to be clumsy and takes up too much room on the table; too small and frequent refilling is required. The shaker I show is a basic design that illustrates the concept well, and it is a good starting point for a first attempt. The only specialty tool needed is a thin pointed spindle gouge for making the final cuts into the funnel, but even that cut can be simplified if necessary.

## Wood selection

I suggest using fine-grained, kiln-dried wood. Begin with a blank that is approximately 3" (75 mm) square and 6" (150 mm) long. I recommend fine-grain wood to keep seasonings from possibly leaking out and perhaps there is less moisture exchange with close-grained wood. Dry wood is important so that salt will not absorb moisture from wet wood, which would lead to clumping; there is really no way to open this shaker up once it has been glued together.

## Mount the wood

Mount the block and rough turn to a cylinder. Make a clean cut on the ends and turn a small tenon on each end. Using a four-jaw chuck, remount the cylinder onto the lathe and true it if necessary. Part the block roughly in half *(Photo 1)*, leaving about 3" (75 mm) in the chuck (the body of the shaker). Clean the end with a skew chisel, cutting to the middle. Make a bead at both ends and reduce the main diameter of the block by a ¼" (6 mm) *(Photo 2)*. This will be finish-turned later, but it helps to have a rough idea of wall thickness when you are in the hollowing stage.

## Hollow the body

Hollowing the interior space can be accomplished with a back-hollowing cut, by scraping, or using a Forstner bit. I prefer employing the highly efficient back-hollowing technique. First, drill a hole that leaves about a ½" (13 mm) of wood at the bottom. Drill this hole with a ⅜" (10 mm) drill bit mounted in a Jacobs chuck *(Photo 3)*, or use a ⅜" spindle gouge if you are familiar with plunging a gouge directly into the wood to drill a hole.

To hollow the interior using the back-hollowing technique, position the tool-rest across the endgrain, hold your gouge with the bevel rubbing, flute closed at three o'clock. Enter the hole, and with bevel rubbing, drop the handle, bringing the top flute into contact with the wood, cutting ribbons of wood away. Open a shallow ⅜" (10 mm) deep hole about 1" (25 mm) in diameter *(Photo 4)*. Return to the middle and this time with the back of the tool rubbing make a cut to the top, going deeper in and peeling away toward the far wall as you drop the handle. Continue in, using the back

1 After turning to a cylinder, turn spigots on both ends, and part in half.

2 Clean up the endgrain and shape a bead at the bottom. Reduce the diameter of the body so that the bead will be raised.

of the tool as a mock bevel that rubs, cutting ribbons of wood rather than scraping dust *(Photo 5)*.

This is a technique that many turners have trouble with, so here are a couple of hints. First, you need to leave that initial 1" (25 mm) opening as you cut deeper. It provides a fulcrum for the tool, necessary for going in deeper and to counter the forces that might break the side of the shaker. Second, after those initial cuts, as you hollow out in more of a bell shape, the back of your gouge is acting like the bevel, bearing against the wood and keeping the tool from catching and jumping back. You are using the gouge to cut through fibers instead of scraping them; it is an efficient way of hollowing. If your tool is heating up or burning the wood at the opening, then you are turning at too high a speed and/or not quite cutting with the tool's edge. Correctly done, your gouge is cutting upside down.

When you have reached full depth, remove the outer fulcrum area with a couple of scraping cuts, using the lower wing of the spindle gouge or a scraper *(Photo 6)*. This should leave a hollowed interior that has a rounded bottom. Be careful not to remove too much wood.

The objective is to leave a smooth, parallel-sided cavity that has a concave bottom (which will become the top of the salturn). A square-sided cavity with a flat bottom will not work as well. There has to be a concavity for the salt to rise into when shaken. If you are having trouble getting that last little pip out of the center, try to come up from underneath with a round-nosed scraper, then cut to the left side *(Photo 7)*. With a freshly raised burr on your scraper, it should be easy to find the pip and feel it cut away. Leave the wall about ¼" to ⅜" (6 mm to 10 mm) thick. Don't make the walls too thin; this is a utility item, it should be sturdy without being too heavy.

Once you have a parallel-sided cavity with a concave bottom, cut a squared rebate in the open end *(Photo 8)*. Use a square-end scraper or a skew chisel on its side. A 3/16" (4.8 mm) square notch is about right. The rebate is for holding the funnel tightly, so it is an important step to make the rebate parallel sided. Use internal calipers to check, as you would to make a box lid *(Photo 9)*. If cut cleanly, the inside surfaces will not need to be sanded.

Mark the wood for jaw orientation (for accurate remounting later), remove it from the chuck, and set it aside.

Drill a hole that is ⅜" (10 mm) in diameter to help establish the inside cavity and make hollowing easier.

Open a hole to approximately 1" (25 mm) in diameter.

Enlarge and deepen the cavity using a back-hollowing cut. Rub the back of the gouge on the smaller opening. The flute should be at about three o'clock, with the top cutting edge engaging the wood between one and two o'clock.

Once depth is reached, use gouge to scrape off the 1" (25 mm) opening.

## Forming the funnel

Mount the other piece parted off earlier. This will be the funnel section (the bottom of the salturn), and its length needs to end up about two-thirds the depth of the interior cavity of the body. If it is too long, then you won't be able to pour much salt into the shaker. Conversely, if it is too short, too much salt will get in and it will spill out of the hole.

Clean up the endgrain. Start to make the funnel shape, keeping an eye on the ▸

Use a round-nose scraper to smooth sides and to create a convex bottom. The sides of the lid should be parallel and roughly ⅜" (10 mm) thick.

Turn a rebate. Use a scraper or a skew chisel.

Use inside calipers to check that the notch is square sided. This is important, so take your time.

Shape the funnel. The tip should be approximately ⅜" (10 mm) in diameter.

Fit the body to the funnel.

Part off the funnel.

Remount body into the chuck and insert the funnel into the body. Make sure it is seated completely into the notch and that the fit is tight. Clean up the bottom.


A cutaway of the salturn.

length. A parabola shape, rather than a straight-sided cone, will hold slightly more salt inside and, it is an elegant shape *(Photo 10)*.

Fit the body of the shaker onto the funnel, just like a box lid is fitted *(Photo 11)*. Start with a rough idea of size, and cut a small incline. See if the bottom step fits. If not, cut the angled section down flat, and make another slight cone. As the body begins to fit, cut the flat to this size. Be careful; this fit is crucial and needs to be tight. Take your time. Keep in mind that you are getting the measurement from the outside of the rebate and not from the interior of the lid.

Shape the funnel into a smooth curve, leaving ⅜" (10 mm) diameter at the tip. The tip can be left square or slightly rounded. Resist the urge to make it concave; this will leave you with a shaker that will dispense salt too aggressively.

When the funnel is shaped and the base fits tightly to the body, if necessary, cut the height of the funnel to make sure its length is two-thirds the depth of the interior of the body. Part the funnel off from the waste, leaving a bit more length than needed to fill the rebate *(Photo 12)*. This extra length will be removed in the next stage.

Rechuck the body of the shaker, gripping the same tenon using the previously noted jaw orientation. Insert the funnel securely into the body, making sure it seats all the way down into the rebate. Clean off the end *(Photo 13)*. With the bevel rubbing on the exterior bottom bead, it will be easy to start cutting the funnel to make a flat bottom.

Start to hollow the inside of the funnel *(Photo 14)*. This is where the salt will be sifted into the interior cavity, so if the funnel is deep rather than shallow it will aid in filling and keep the salturn from feeling too heavy. But of course do not cut completely through the wall of the funnel.

When you have cut as far as you can with a traditional spindle gouge, use a small, acutely pointed spindle gouge to advance the interior of the funnel to a point *(Photo 15)*. When using this tool get the bevel rubbing and use the point to cut. Cutting to the exact center with this pointed tool is important; an off-center cut can leave a nib that is hard to remove. Once you have gone as far as possible with this tool, use a small drill bit to cut completely through the funnel tip. A ⅛" (3 mm) hole is usually sufficient for salt. I use a 9/64" (3.5 mm) or even 5/32" (3.9 mm) drill bit if I am making a peppershaker. Hold the bit in a Jacobs chuck *(Photo 16)*, or simply hold it with a pair of pliers. Either way, advance the bit carefully, clearing the waste often.

Turn funnel flush with bottom of shaker body, then start to curve the cut into the center.

A small sharply pointed spindle gouge will help turn the small opening into the funnel spout.

Drill a hole through the funnel spout.

Use a rubber-tipped air nozzle—a quick blast will unseat the funnel.

Rechuck the body of the shaker. Use either long chuck jaws or a jam-fit chuck. Shape the body, sand, and finish.

Glue in the funnel into the body.

## Finish the bottom

Now that the hole is through the tip of the funnel, sand the bottom, and wax or finish as desired. I don't finish the inside; there's really no need to do so. On the outside I often use oil and wax, which can be applied on the lathe quickly. Upkeep is simple—the shakers live in my kitchen and it is easy to wipe on a little oil from time to time to keep the wood looking good.

With a rubber-tipped air nozzle give a short blast into the funnel, popping it out of the body *(Photo 17)*. Alternately, take a long screw and turn it into the funnel half a turn and use it to pull the funnel out. Be careful not to break the tip of the funnel!

## Remount and finish the body

Remove the body and reverse chuck it onto the main cavity. If you don't have jaws that will accommodate the opening, use a piece of scrap wood to make a jam-fit chuck. Turn a tenon to fit into the opening in the body *(Photo 18)*. Turn the outside of the form, making whatever decoration you desire. Sand and finish.

Remove the body from the lathe and clean the inside of dust. Apply a small dab of glue and seat the funnel, taking care to match up the grain *(Photo 19)*.

Gluing the funnel in place is important, as my mother-in-law found out: The salt must have pulled moisture from the wood causing a poor fit, the bottom fell out, and salt piled onto her chair as she was setting the table...then, she sat on the funnel!

Fill the shaker by pouring salt into the funnel, and lightly shake the container to sift the salt down. When full, turn the shaker over to sit it upright. A quick shake, up and down, will dispense salt out the bottom. The salt, which is now resting between the funnel and the body of the shaker, rises to the top on the upswing. The particles crash into each other in the dome, and a small amount comes out the hole in the funnel on the downward motion. It works better than you might think.

## Design potential

The shaker shown is basic: simple beads for decoration, simple shape overall. There is, however, vast opportunity for experimentation and self-expression. The mechanism that makes this piece work is the relationship between the funnel and the domed cavity. Though unwieldy, this concept could work if the shaker was the size of a bucket, or as small as a thimble.

Here are some considerations: How many shakes does it take before the shaker needs to be filled? How large is it on the table? How heavy can it be before it feels like a brick? How long a stroke does it take to get the salt to the top of the dome? Consider these questions while designing. The hole in the funnel can be changed for different needs, but be careful—too much seasoning expelled with each shake can ruin food. I would also be careful about making the container too tall. Although it might look neat to have a matched set of salturn and peppermill, if you have to shake the salturn more than a couple inches to make it work properly I doubt it would see much use.

Even so, I have made taller shakers. They have a longer funnel, making up the base of the shaker, but the funnel's tip protrudes into the domed cavity that all-important two-thirds of the way. This has proved a workable design. I have also made spherical objects, almost like river stones. They have a pleasant feel and are not heavy. I can imagine much more elaborate shakers, with pierced outer skins, or collaborations with other artists: a nut and bolt, an apple with a bite taken out, or a see-through shaker made of acrylic. Be inventive and see what you can create. ■

*Keith Gotschall is a woodturner and furniture maker who lives in the mountains of Colorado. He demonstrates and teaches nationally. More information can be found by visiting his website, keithgotschall.com.*


The river stones are finished with milk paint. Although they are shallow, they follow the same inside measurement ratios.