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## Turned Drawer Cabinet



A turned cabinet with side drawers ... it's pleasant to look at, inviting to try the operation of the drawers, and great to store and dust-protect smaller items. There are many options for the overall design and embellishment of the cabinet, which could be a standalone piece or a part of a larger cabinet.

The dimensions and turning parameters for a cylindrical cabinet with drawer can be computed at [kaimuenzer.com/boxes-and-jewelry-cabinets/](http://kaimuenzer.com/boxes-and-jewelry-cabinets/). The dimensions of the demo cabinet (shown at the end of this handout) are based on the defaults at the above link.

The goal is to turn a one-side-open, one-side-closed cylinder from a cross-grained bowl blank of dry wood. We keep the outside shape simple and aim for a single drawer. For the drawer chassis, start with a cylindrical or almost cylindrical shape for your initial project. The closed side of the cylinder will end up being the top of the cabinet.

In terms of technique and tools, the cabinet chassis can be turned similar as a bowl but with a few important features. Use a caliper for an even wall thickness of the cylinder. Also critical is a flat underside of the top of the cylinder. This will be the reference surface for the internal drawer fixture. Keep a clean edge at the open side of the cylinder



so a jam chuck can be inserted to allow turning the top of the cabinet later. For the marking and cut-out of the drawer front, keep the turning fixed on the lathe. Finish the outside of the cabinet chassis up to a sanding of 220 grit.

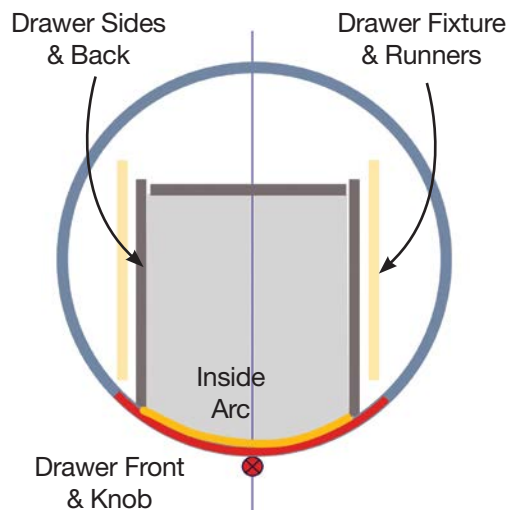
The drawer consists of the front, the sides the bottom, and the knob. For this project, we cut the drawer front out of the turned cylinder and attach the other parts later. The goal is a drawer front that blends in as an integral part of the turned cabinet in terms of shape and texture.

### **DRAWER FRONT**

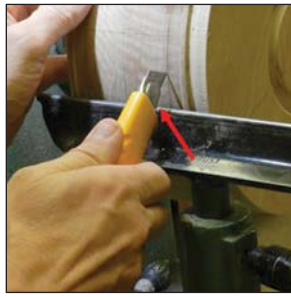
A good choice for the lengths of the drawer front is about 1/4 of the diameter of the cabinet. Mark the center of the drawer. That's where the knob will be placed later, ideally within the end grain of the cross-grained vessel.



Define the position of the vertical sides of the drawer front by marking masking tape at the center point and at 1/8 of the circumference, both left and right of the center point. Now draw the vertical sides using a carpenter's square. The horizontal sides of the drawer front are marked by rotating the vessel 1/4 turn.



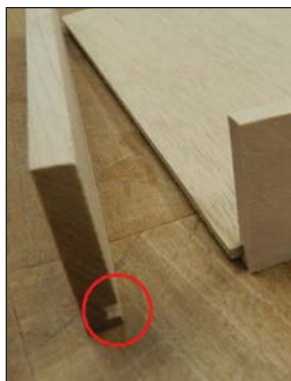
Cut out the front, with the goal of achieving a consistent and narrow gap between the front and the cabinet chassis. To establish grooves that later guide the saw, follow the pencil lines with a carpet knife, using a carpenter's square and the toolrest. Several light and careful markings with the knife work better toward a clean cut than deep grooves as the result of higher pressure. Slow down the cut toward the corners of the drawer front. To complete the cuts with the grooves in place, I use extremely sharp and thin Japanese-style saws. Pay attention to hold the saw perpendicular to the surface of the vessel and cut as consistently as possible. Cut out the corners last. Because of its shape, the front will rest on the sides of the cabinet and not fall into it. If sanding is desired along the cut-out, use sandpaper attached to a flat-surfaced stick and be careful not to round the corners. It pays to practice the cutting process on dummies.



Once the drawer front is cut, I typically complete the turning of the cabinet. With the jam chuck attached to the open side of the cylinder, often supported by tape from the outside, the spigot can be turned off and the top of the cabinet cleaned up. Decorating and finishing the outside of the cabinet is limited only by your creativity and not unlike other turning projects.

### DRAWER

There are various options to construct the other parts of the drawer. For this size, I typically use a 3 mm (1/8") sheet for the bottom and 5 mm (3/16")



hardwood for the sides. Shallow grooves cut into the sides with a table saw blade act as a mortise for the bottom sheet and as a glide surface for the runners. Cut out a radius of 1/2 diameter of the inside of the cylinder to the bottom sheet. The edges of the 2 sides that attach to the drawer front need to be shaped with an angle fitting the inside of the drawer front. At assembly, take care that the sides of the drawer are truly in line with the drawer front. The drawer can be glued up in one step as pictured.



### DRAWER FIXTURE

The drawer runners are attached to rails that hang on the underside of the top of the cabinet. Having followed the instruction for the position of the drawer front, the direction of the grain of the rails and cabinet chassis should be almost parallel. For a better fit, I typically attach the rails to a sheet at the cabinet that has been sized so the drawer slides freely on the runners.

All parts are in place now to attach the drawer fixture elements into position to the underside of the cabinet and to plug the runners into the sides of the drawer. As we aim for a proper fit and even gap



of the drawer front in the cabinet, testing is critical before final commitment. Test by intermediate attachment using spot gluing with dots of CA or hot glue. With the cabinet sitting on its top, slide the runners and rails into the inserted drawer and mark the position of the rails on the underside to the top of the cabinet. Spot glue the rails and test the fit of the front.

Also test the free movement of the drawer. Note adjustments and with these in place repeat the test. Once you are happy, re-glue the assembly with carpenter's glue or epoxy. Typically I use carpenter's glue for all parts that I can clamp thoroughly.

To minimize effects from differential expansion and rot, make sure to add at least a sanding sealer to all parts of the drawer, fixture, and inside of the cabinet.



## DRAWER KNOBS

Turn a small drawer knob with a finial technique. Make sure that the knob can stand proud of the drawer front for a pleasant grip. The knob will need a small turned tenon that fits into a drilled hole of the drawer front. If you drill through the drawer front, remember to support the drill exit.

## DIMENSIONS OF THE DEMO PIECE

The mortise is cut by table saw with blade thickness of 1/8". The blade thickness determines thickness of bottom board and runners.

Cabinet Diameter, outer at drawer .	21.0 cm (8-1/4")
Cabinet Wall, thickness . . . . .	0.5 cm (3/16")
Drawer Front, length . . . . .	16.5 cm (6-1/2")
Drawer Side, thickness . . . . .	0.6 cm (1/4")
Drawer Side, mortise depth . . . . .	0.2 cm (1/16")
Drawer Side, length . . . . .	14.2 cm (5-9/16")
Drawer Side angle to front . . . . .	39°
Drawer Backside, length . . . . .	12.4 cm (4-7/8")
Drawer, Total width . . . . .	12.8 cm (5-1/16")
Drawer Bottom, length . . . . .	16.0 cm (6-5/16")
Drawer Bottom, width . . . . .	12.8 (5-1/16")
Drawer Bottom, radius . . . . .	10.1 cm (4")
Fixture Rail, thickness . . . . .	0.8 cm (5/16")
Gap between Rails . . . . .	13.8 cm (5-7/16")
Fixture Rail and Runner, length . . .	12.4 cm (4-7/8")
Fixture Runner, width . . . . .	1.1 cm (7/16")

## Box with Tilted Lid

The curious observer is invited to open the lid. A decorative ring enhances the tilted angle of the interface between the box and its lid. The inside cylinder of the box is turned perpendicular to this interface along a tilted axis to the outside of the box.

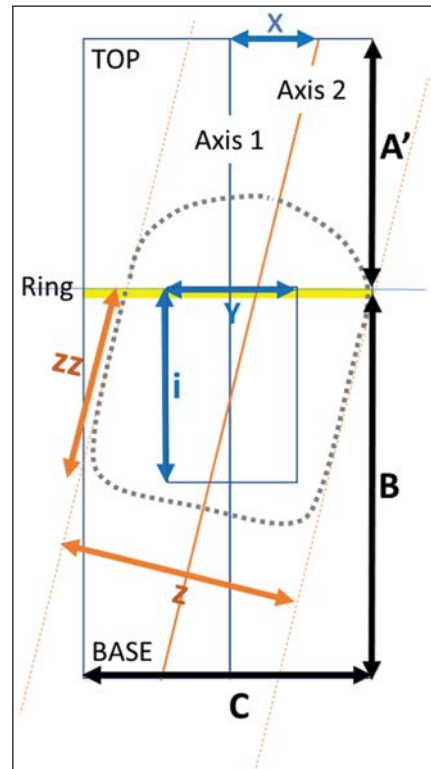


This project is an exercise in "turning to numbers."

Dimensions and turning parameters for a box with tilted lid can be computed at [kaimuenzer.com/boxes-and-jewelry-cabinets/](http://kaimuenzer.com/boxes-and-jewelry-cabinets/). (Dimensions of the demo box (shown at the end of this handout) are based on the defaults at the above link.

Select a dry square blank with the grain running along the long axis. The diameter should be about 30%-50% wider than the desired final box diameter. Select a tilt angle ... 12°-18° works well for these boxes. Before turning, the blank is cut and a decorative slab is inserted at (B) and glued to both sides with carpenter's glue. The direction of grain of the slab should follow the one of the blank.

Mark the center of the blank on the end grain on both sides (1st axis). Mark the off-center for the direction of the 2nd axis on opposite sides (X) with a locating hole. As with spindle turning, mount the blank along its centers (1st axis). As far as turning tools, use the same familiar gouges and scrapers as for turning a conventional box. Rough the blank into a cylinder with at minimum a (C) diameter. Turn the



spigots tailored to your jaw chuck at both sides. The spigots must not interfere with the marks of the off-center (2nd) axis. Mark a line parallel to the lathe axis across the decorative slab with a pencil and avoid erasing it. Part the blank between (A) and (B), just above the decorative ring into BASE and TOP.

Mount the BASE to your chuck. Clean the parting cut with your favorite tool and mark the inside diameter (Y). Core the inside to the depth of (I) and to the width of (Y). As with conventional box turning, the opening should be turned nicely square to allow a proper fit for the TOP later. Sand and finish the inside of the box.

Mount the TOP to your chuck and clean the parting cut. Turn a top that fits tight into the BASE.

Fit the TOP and the BASE at the pencil mark established earlier. Clamp the blank at the 2nd axis (X) with the TOP toward the drive side of the lathe. A small diameter step center drive works well for the offset clamping. Turn the blank aiming to be lathe parallel and without offset gap just around the width of the tilted opening of the box, highlighted by the decorative ring. End with a diameter of (Z) at the tailstock side of the opening.

You want to shape the TOP side so that the box opening, specifically the decorative ring, will be symmetric - after lifting the lid from the box. The final shaping cuts will be slightly above the decorative ring at its most drive center distant side. Occasionally open the box and check for the symmetry of the ring. Establish the shape of the TOP along the entire width of the opening and leave the rest of the turning of the TOP for later.

The bottom length of the BASE is given by (ZZ) and measured from the drive center distant side of the decorative ring. Turn a spigot that fits your chuck just away from (ZZ) with space for parting the BASE later.

Chuck the box at the BASE with the TOP still attached and finalize the TOP. Sand and finish and part the box. Note that afterward you will not be able to further turn the bottom of the BASE.

A decorative position at the TOP for mounting a separately turned knob or a finial is along the 1st axis of turning. You can find that position and optionally drill a small hole if you build and mount a jam chuck that fits the tenon of the TOP.

The description above assumes prior experience with box turning. Various techniques are available in classes and online with AAW. Enjoy the challenge.

### DIMENSION OF THE DEMO PIECE

Tilt angle . . . . .	15°
Blank length (A+B) ** . . . . .	12.7 cm (5")
Blank width (C) . . . . .	7.4 cm (2-15/16")
Depth of inset, max (I). . . . .	.3.5 cm (1-3/8")
Minimum wall thickness . . . . .	0.5 cm (3/16")
Top-fitting tenon depth . . . . .	0.9 cm (3/8")
Parting tool width . . . . .	0.3 cm (1/8")
Offset 1st to 2nd axis (X) . . . . .	1.5 cm (19/32")
Inside diameter, max (Y) . . . . .	.4.4 cm (1-3/4")
Outside diameter of final box (Z) . . . . .	6.2 cm (2-7/16")
Min box height, without lid (ZZ) . . . . .	3.9 cm (1-9/16")

\*\* (A') denotes (A) without the width of parting and the box-fitting tenon.