A Roll-Top Microscope Desk

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Introduction

This is a project I built some time ago, during my graduate school days. One night I was working late, and watched a janitor push a dust mop around the room. He had quite a back-swing on his mop handle and I winced to think what would happen if he hit a scope or some samples. Wouldn't it be great if you could leave your microscope and equipment out for convenience, yet keep it protected when you weren't using it? I started thinking about the advantages of a roll-top desk:

- Ample work space; lightweight; a design that can be incorporated into an existing home or office layout.
- Equipment and samples are protected from dust and from knocking about.
- The clutter is out of sight when not in use.
- Always ready for work; no setting up equipment before use; no packing away after use.
- Work can be suspended for lunch or over night. If someone says "Let's get some beer and pizza", you close the desk and you're out of there (remember, this is the graduate student speaking). When you return, everything is just as you left it.
- There is room for scopes, accessories, tools, supplies, samples, slides. You can get organized!

The desk I built, and still use, is shown in Figure 1. It is the top half of a roll-top desk that sets on any available table. Thanks to some labor saving choices, construction was easier than you might think.

This project doesn't require too many woodworking tools, and you don't need to be a skilled woodworker.

The desk has three components: the body, the tambour, and the gallery of shelves. I'll generally describe these components, but leave each person to work out details and personalize the plan as they go along. I mention some simplifications and offer some tips for woodworking neophytes. If, on the other hand, woodworking is your *second* hobby, you will see various ways to refine my old design.

Figure 1. *Roll-top microscope desk shown closed and open.*

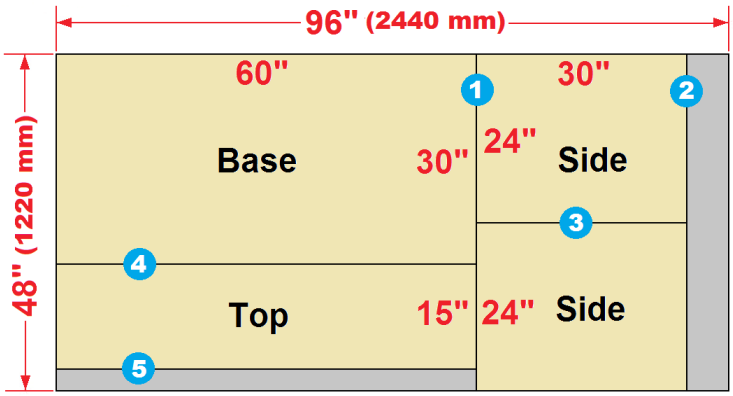


Figure 2. *Cutting diagram for the desk body. Material is a 4 feet x 8 feet x 3/4 inch sheet of material. Numbers in circles are the sequence of cuts. Your lumber dealer can make these cuts for you, which means you don't need a table saw or circular saw.*

Desk Body

Figure 2 shows how the desk body components are cut from a sheet of material, 4 feet x 8 feet x 3/4 inch thick. As a student, I kept costs down by using particle board and painting it. MDF (medium density fiberboard) is another inexpensive option. Today, I would use birch or oak faced plywood because of the small price differential. Wear a dust mask when cutting or sanding; this is especially important with MDF.

Figure 3 shows how pieces are milled. A hand-held router is the best tool for this milling work. Rig a pivot to cut smooth arcs for the curves; use a straight edge to guide the straight cuts.

The tambour track is specified as 1/4 inch wide. It carries tambour slats that themselves are nominally 1/4 inch thick, but finished slats are actually 3/16 inch and should fit. Check dimensions on your own material.

The assembled view shows how pieces fit together, and shows additional trim. Blue trim is 3/4 inch quarter-round molding. Red trim covers horizontal edges; it is the same molding used for tambour slats. Yellow trim is flexible edge banding on the side pieces.

A back (not shown) encloses the desk interior and adds stiffness. The back is 57.5 inches x 25 inches x 1/4 inch; any material will do. The back is screwed in place, but not glued.

Glue and screw the top, bottom, and sides together and brace them square until the glue dries. Apply your choice of finish. Particle board and MDF are painted; paint all exposed surfaces to seal them. Plywood and solid wood trim have more options: paint, stain, or clear coat.

This completes the body of the desk.

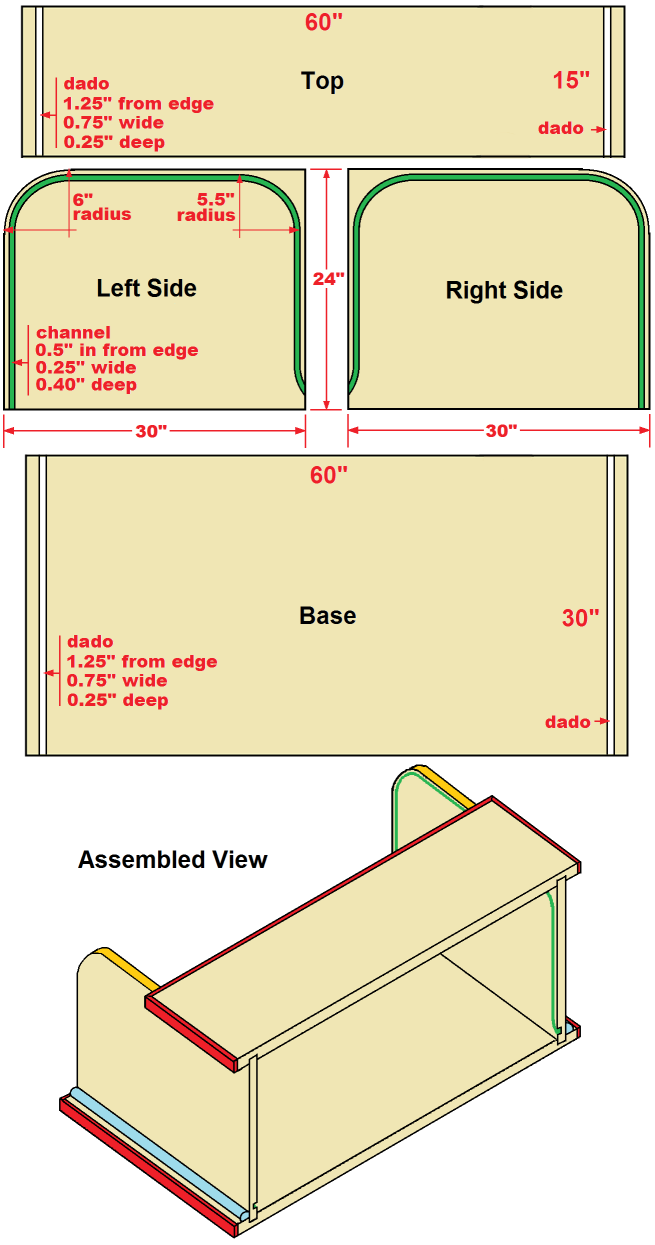


Figure 3. *Milling desk components. Sides have a track for the tambour. Top and bottom pieces have dados (grooves) to hold the sides.*

Tambour

The tambour is the part of this project that many expect to be difficult, but it isn't. A tambour curtain is nothing more than a number of narrow wood slats spaced edge-to-edge, and attached to a flexible backing (usually canvas). This curtain can flex to follow the curve of the tambour track (Figure 4). For additional information, search the internet for "do it yourself tambour". You will find many articles; many alternate designs. I used these simplifications to make construction easier:

- **Simple design.** I used simple flat slats, not complex slats that require a lot of milling.
- **Ready-made slats.** I used "window screen molding", a shaped and sanded semi-finished product.
- **Simple assembly.** I used a material called Drytac Adhesive-Coated Canvas. This product for the art and photo industries is canvas with a heat-sensitive adhesive. Slats were individually ironed onto the canvas backing with an old clothes iron – no messy glue.

Slats. You can cut slats to length before hand, then align them carefully during assembly, or you can leave them a little long and trim them after assembly; I did the latter. 36 inches of tambour curtain requires 46 slats plus the handle piece. You will use another slat to back the handle (Figure 4A), and a couple of molding pieces for desk trim. Slats are a bit less than 5 feet long, so you can cut 10 feet molding strips in half for minimal waste. Keep two molding pieces full length, because two desk trim pieces are slightly longer than 5 feet due to mitered ends.

Backing. Lightweight canvas holds the slats together. The usual method of attaching slats to canvas is contact cement. You can also use Drytac, as I did. Canvas does not cover the very ends of the slats, where they run in the tanbour track (Figure 4B); this cuts down on friction. Fasten slats to the canvas. Allow extra canvas at the bottom edge to attach the handle, but don't attach it yet.

Handle. Figure 4C shows the tambour handle, which is more massive than the slats, and adds stiffness. Tabs milled at each end of the handle duplicate the profile of tambour slats. Don't attach the handle to the tambour curtain until after parts have been installed in the desk.

Installing. Remove the back from the desk. Smooth the tambour track by running a piece of sandpaper wrapped in a wood block along the channel. Then lubricate the track by running a wax candle in the channel. Tilt the handle and insert it into the track from the front. Feed the tambour curtain into the track from the back. Now you can attach the handle to the tambour using the same method as for the slats (contact cement or iron-on adhesive). Screw a molding strip to the back of the handle to prevent the canvas from working loose (Figure 4A). Reattach the desk back.

With the tambour installed, you have a functioning desk, or, to use kitchen design terminology, an "appliance garage" for your microscope.

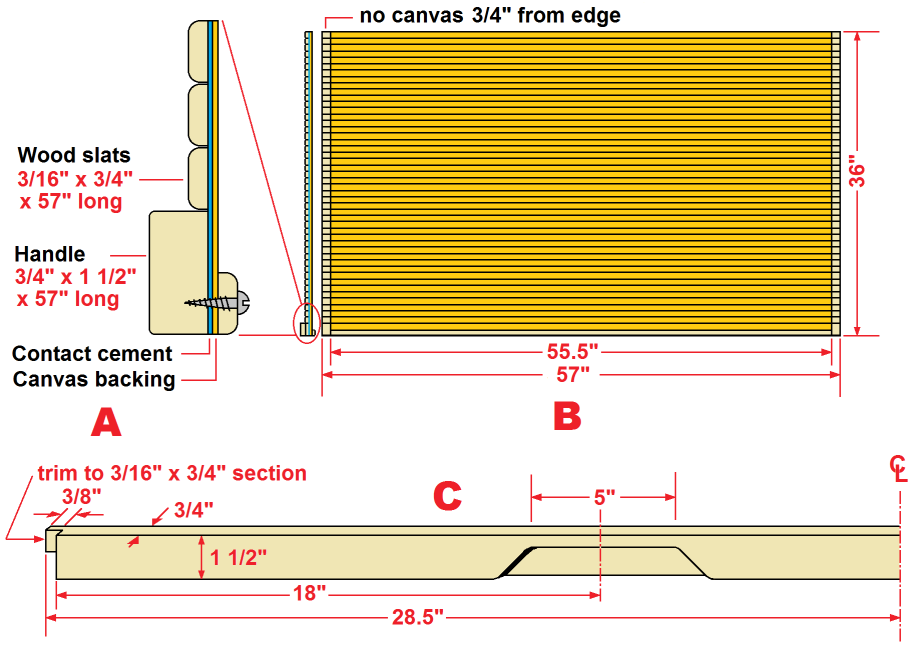
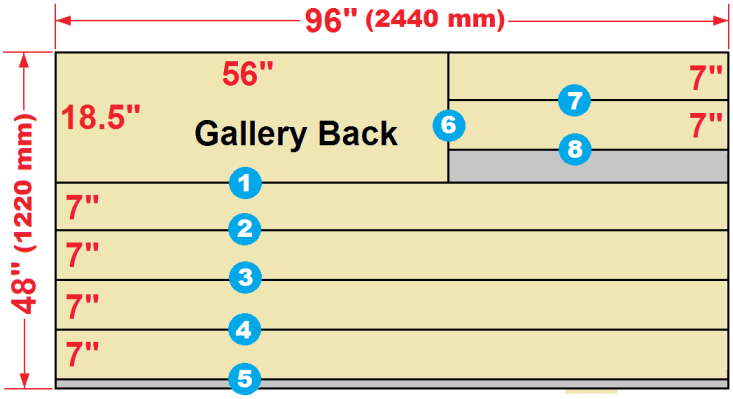


Figure 4. *Tambour construction.* ***A:*** *Detail of construction.* ***B:*** *Overview of tambour curtain seen from the back.* ***C:*** *One half of the tambour handle; the other half is a mirror image.*

Figure 5. *Cutting diagram for the Gallery. Material is a 4 feet x 8 feet x 1/4 inch sheet of plywood. Numbers in circles are the sequence of cuts. Your lumber dealer can make these cuts for you, which means you don't need a table saw or circular saw. The 7 inch wide boards are cut to various lengths to make shelves and side supports.*



Gallery

The gallery sets in place within the desk; it is not permanently attached. For the most part, the gallery is just shelf space to hold small items (Figure 6), but a few features are customized for microscope work:

- A small shelf holds cover glasses, slide labels, and specialty slides. This shelf is at eye-level for a clear sight line, and is 3 inches wide so contents can't be pushed back out of reach or out of view.
- A second narrow shelf has a lip to keep bottles in place; it holds immersion oil, mounting media, stains, etc. A tiered section holds small bottles.
- A double-height shelf provides space to stow a slide cabinet.
- A surge-protected power station allows easy control of electrical items.
- Originally, the desk had an equipment support column salvaged from an old photo copy stand. The purpose was vibration-free support of a film camera. Vibration is no longer a problem with digital cameras, so the column has been removed. It can be reattached if needed for other equipment (eg: for a picking finger).

Figure 5 is a cutting diagram. Figure 6 shows the gallery design. On the prototype, I used simplified construction with butt joints and surface-mounted supports (zoom into Figure 1 to see this detail). This crude design isn't recommended, unless, like my graduate student self, you lack resources (tools, workspace, time) to make a better joint. It is the essence of "quick and dirty". Figure 6 shows a better joint with double thickness side supports and dados to hold shelves. You can glue up two 1/4 inch boards to make the double thickness pieces. The upper rear corner is cut at 45 degrees to provide clearance for the tambour track.

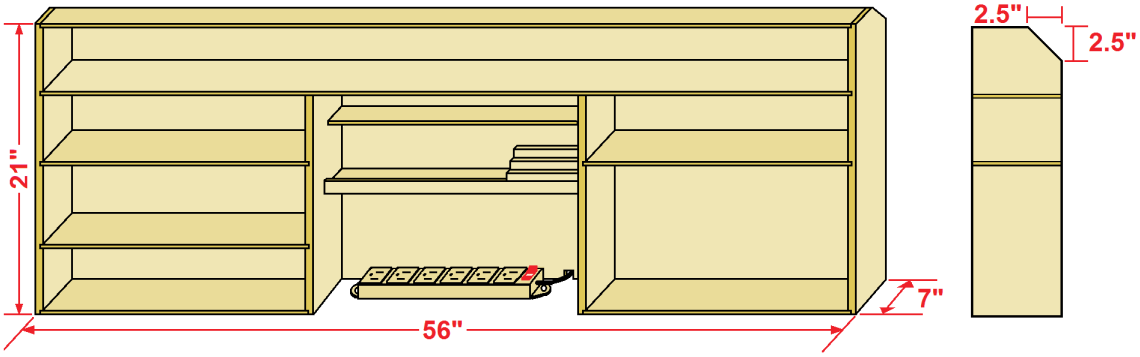


Figure 6. *Gallery.*

And there you have it. Because materials and cut pieces can vary slightly, I suggest you determine your own detailed measurements, rather than relying upon the numbers I give here.

For comments or questions, the author can be contacted at JPCHECKLST AT AOL DOT COM.

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