

A Writing Table – December 2011

This project is a Christmas 2011 present for my client. He's not aware as of this writing that he's the target of my intention to provide a writing table for him; and since the drawing is a secret process, no one else is supposed to know either. Since we draw names for Christmas presents – as opposed to everyone getting a present for everyone else – we try to get something memorable for our 'drawing person'.

It's also a tradition that I give a present of one of my woodworking projects. Over the years making the gift has been an enjoyable process for me while meeting the requirement of being memorable for the recipient. Of course, memorable is in the eye of the beholder, and courtesy being a keystone for family behaviors, one never really knows if the memory is more special to the giver or the receiver. After all, I wouldn't expect someone to say that the gift just didn't meet his or her expectations.

I made a writing table for myself a few years back and it really has improved the functionality of my den. It has a few really convenient attributes; it fits nicely into the space available and it provides a clear writing surface – unless you count the clutter I'm inclined to leave there. In fact its only downside is that it has no drawer in which to put the writing implements and stationary supplies. Thus, the writing table for my client will have that added requirement.

The design was done using Google's Sketchup design program which gave me the opportunity to view the table before spending too much time and cutting too much material before deciding that the design just wasn't what I'd envisioned. Figure 1 was my first attempt but turned out to be a bit plain for my taste. The problem was the tapered legs. No matter what

you do with a table, putting tapered legs on it imparts a Shaker look, and that wasn't my objective with this project.



Figure 1 First attempt at a design. The tapered legs didn't appeal to me.

I decided to wait for inspiration on the legs hoping for an epiphany while going on with the rest of the design. A table is just a table after all, so the real challenge would be joints and the drawer. The table is simply four legs, four aprons, and a top. Figure 2 shows the design in some detail.



Figure 2 Table Design Detail

The drawer rides on an internal frame connected to the front and rear aprons. The frame captures the drawer horizontally preventing racking as it slides in and out.

The aprons are connected to the legs by means of mortise and tenon joints and the table top is connected to the base with screws through glue blocks situated to enable expansion and contraction of the table top.

Construction began with cutting out all external parts including legs, aprons, top, and a spare apron piece to enable sizing the tenons when later needed.

The legs were milled square with the planer and table saw. The mortises were cut using a dedicated mortiser while the legs were still square to avoid holding problems.



Figure 3 Mortiser



Figure 4 Apron parts with spare for fitting tenons to mortises

Tenons were cut in two steps. The first step was to put a saw cut all the way around all ends to make a clean break at each end of each apron. That was done with the apron riding on a panel sled and the end of the apron butted up against the saw fence. That made sure all tenons were of the same length and properly placed on the apron.



Figure 5 Setup for making grooves around all apron ends in preparation for making tenons

With all ends prepared, the saw blade was replaced with a dado blade and the waste cut from one side of the tenon.

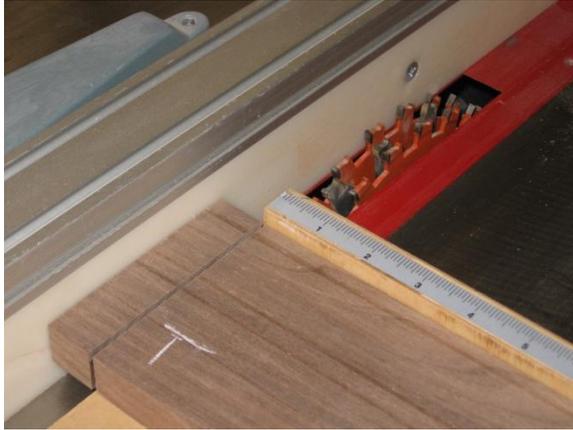


Figure 6 Dado setup for removing waste from tenon

When one side of each tenon had been cut, the spare apron piece was used to sneak up on the thickness of the final tenon and all pieces were cut with the dado. The tenons at this stage were a little thick to allow for fitting with a hand plane during dry fitting.

I used a twelve inch walnut board for the top. I cut two pieces from the board to length for the table top, leaving enough to enable shifting for best fit, and then edge glued them with Titebond 3. After the glue dried, I used a scraper to even out the glue line.



Figure 7 Table top with scraper used to level joint of the two boards

The leg design evolved into its final stage while I was in the shop. I used a chamfer bit in the table mounted router to chamfer the corners in

a pattern that pleased my eye. The setup for the chamfer operation is shown in Figure 8.



Figure 8 Jig used on router table to chamfer table legs

The final shape of the legs turned out to be a chamfered square.



Figure 9 Section of chamfered leg

The chamfer on the legs begged for a tie-in feature on the aprons, so I used the router table

setup to chamfer the bottoms of all apron parts. The sides and back were chamfered on inside and outside face while the front apron was chamfered on the front face only to leave adequate space for the drawer frame connection.

With the legs formed on the router table the next step was a dry fit of all apron and leg parts. The results, shown in Figure 10, show the dry fit in clamps.



Figure 10 Dry fit of aprons and legs

With the table frame dry fit and clamped, I was able to measure for the drawer frame. These parts are cut-to-fit since dimensioning them before hand could be compromised by the build-up of tolerances while cutting the other parts; an example of this are the legs which were designed to be 1 7/8 inch square but which were somewhat less after final planing.

With the measurements for the internal frame enabled, a quick design modification was done and construction begun. The frame is just 6 pieces. The base of the frame was done with saddle joints using a tenoning jig on the tablesaw. The slot on all ends was cut by making one pass, turning the board around and making a second pass. The resulting slot is therefore centered.



Figure 11 Tenoning jig set up for cutting slot in board ends

The tongue is made by using a sacrificial board and sneaking up on a tight fit in the slot. The frame was glued up using Tightbond 3, clamped, and squared.



Figure 12 Bessey Clamps used to keep frame squared during glue up

The completed frame has two alignment pieces to guide the drawer from side to side.

I chose the next step to glue up the legs and apron to form the base of the table and protect the parts from getting scratched up lying around the shop. I've learned that before the actual glue up of an assembly like this it's always good to do the sanding of all parts. When all parts are glued together it's difficult to sand right up to the joints. Sanding before assembly eliminates the need for all but a little touchup after the glue up. Once the base assembly was glued together I was able to set it aside in a safe place until it was needed for its next procedure.



Figure 13 Glued together aprons and legs.

The drawer was the next step. I used a Leigh dovetail jig to make the half blind dovetails for the drawer face and back. Normally the back of a drawer isn't done with half blind dovetails but since I was set up to do it, I took the easy way out. If I had had a number of drawers, I would have instead done the back of the drawer with through dovetails or a slot and nail approach.



Figure 14 Drawer glued up. Note half blind dovetails front and back

The bottom of the drawer is $\frac{1}{4}$ " Baltic Birch plywood captured in $\frac{1}{4}$ " dado slots set $\frac{3}{16}$ " from the bottom edge of the four drawer members.

To make sure the drawer is a tight fit it will ride on the frame described above. The frame rests between the front and rear aprons so that, when fully inserted, the drawer rests on the frame and is captured side to side and vertically by the frame.



Figure 15 The frame being glued to the front apron flush with the bottom edge of the drawer opening.



Figure 16 Orientation of frame in table during attachment process. Note how frame is held flush with bottom edge of drawer opening.

With the base of the inside frame glued and screwed between the front and back apron, the next step was to install the drawer guides and align the door. Clamping the drawer so that it was flush with the front apron, the guides were screwed to the base of the inside frame. To enable readjustment if needed, glue was not used on the guides.



Figure 17 Drawer fitted into frame and flush with front apron.

To keep the drawer from seating further back than flush with the front apron and to provide for future adjustment should it be needed, I installed two screws in the back of the drawer to bottom out on the back apron.



Figure 18 Drawer partially closed revealing depth adjustment screws. The screws ride with the drawer so that depth adjustment can be easily accomplished.

Table top attachment blocks were glued to the side aprons. The three attachment points on each side were equally spaced with the center hole fixed and the two outside holes elongated to permit expansion and contraction of the table top.



Figure 19 Attachment block for fastening table top to base allowing for expansion and contraction.

The next step in construction was to trim the top to size leaving a 1 ½ inch overhang on all four sides. After trimming the top to size, the edges were routed with a ½" round over bit. The bottom was routed to full depth of the bit but the top only about 2/3 of the depth. This was done to give the table an uplift appearance.

Next the top was put upside down on the bench and the base of the table attached to the top with 6 screws. This was done before finishing the top so that it can be reattached after finishing without a lot of measuring and alignment. The top was then removed from the base and moved aside to begin the finishing process on both the base and the top.

The end grain at the ends of the table top was very porous so I sanded it with inserts from my trim sander and 100 grit paper. Then I used a ½ pound mixture of de-waxed shellac to seal the ends grain. The table was then sanded through the grits up to 320 using a random orbit sander and then hand sanded with 320 grit on a block.

Walnut is an open-pore wood species. When a film finish is applied directly to it, the finish follows the contours and leaves a very irregular texture. The more thin film finish is added, the more irregular it can become. Some finishers will sand the surface level between coats with some limited success. My approach is to fill the pores before adding any film finish. Rather than adding a filler, which can muddy the finish, I use an oil or wiping varnish finish applied with wet/dry sandpaper to create a slurry of sanding dust and oil which will fill the pores and smooth the surface without the muddy effect. The oil is sanded aggressively until the slurry develops. When enough slurry is evident – a judgment call – the mixture is wiped across the grain forcing the slurry into the pores and other irregular places. I'm very forceful in wiping across grain in an effort to get the slurry into the texture of the wood. After this is done, I wipe softly with the grain to get excess off without pulling any from the grain.

The top was finished with lacquer after it was thoroughly dry. I waited about 72 hours in a

dry, warm environment and then sniffed to ensure that fumes were dissipated.



Figure 20 Table top prior to filling the grain with oil slurry.



Figure 21 Table top after one application of oil slurry filling the pores in the grain.

The base of the table was made from solid walnut. The legs were made from 8/4 walnut planed down to less than 1 ¾". There was quite a bit of sapwood in the legs, so finishing them required some equalization in tone with the parts that were heart wood. In similar manner, the aprons had tonal deviations due to sapwood as well as color match differences with the legs. I used Watco wiping varnish with a brown tint to tone down the differences. The product was labeled "Dark Walnut". I applied it with a foam brush and wiped it off. I prefer this approach to using a pigment stain or dye since

the oil has the effect of enhancing the grain pattern adding depth without risking blotching.



Figure 22 The base assembly after treatment with dark Watco wiping varnish

The finished table will be delivered on Christmas day, but I brought it into the house ahead of time to keep from damaging it in the shop.



Figure 23 Finished writing table.

Comparing the finished table to the original design was a satisfying exercise. Figure 24 shows the original design concept and Figure 25 the finished table.



Figure 24 Original Sketchup conceptual design



Figure 25 Finished writing table.