

Lingerie Chest



This piece begins with structural dovetails where the case bottom to joins the case sides. Structural because they will be hidden under a moulding when the piece is complete. Begin the layout at the front edge of the case sides with a half pin that is a 1/2" wide. The rear edge of the layout needs a half pin as well, this one is 1-1/2" wide. The area in between is then divided into tails of equal size while the pin size should remain close to a 1/4" on the face side of the layout. This will display hand-cut work. Extend the lines of your dovetails down the non-face side at 90 degrees.



Make the cuts that define the dovetails. You can use a hand saw or speed things up by setting the angle on your jig saw to match the layout lines and cutting the stock, I use 12 degrees. If you use the jig saw you will only be able to cut one side of each tail without changing the angle to finish the opposite cuts. Also, slow the speed of your saw if you can. This will give you more control during the cut.



Make sure to keep the base of the jig saw level. Any tilting of the saw will result in an over cut on the face of the side panels.



Position the saw back to 90 degrees and remove a large portion of the waste material in the dovetail socket areas. With the Face of the sides against the bench, cut into the socket and along the scribe line staying about an 1/8" away. As you near the opposite cut you will need to tilt the saw on it's heel and complete the angled cut as shown. Cut in one direction then turn and repeat the same style of cut to remove the balance of the waste.

With the majority of the waste removed you can now complete the dovetail sockets by placing the chisel into the scribe line and working the joint to the halfway mark, maintaining a 2 degree angle on your chisel. Flip the side and complete the socket in the same manner. This will result in a socket where the back edge is cut at a "V" which will allow the joint to close tightly as the pins are driven into the tails.



Lingerie Chest



6. *Transfer the layout of the pins onto the case bottom. A sharp pencil or marking knife will give you an accurate transfer.*



7. *Make the cuts to define the pins at the band saw (you could also use the jig saw or cut by hand). Cut each side then add a third cut in the middle of each pin waste area. This will allow the waste to be removed more easily. Remember to maintain that two degree angle to your chisel here as well.*



8. *When the dovetail joints are completed we need to layout for the front drawer dividers according to plan.*



9. *My favorite method for cutting the sliding dovetail slots for the dividers is to use a square platform jig along with a 3/4" outside diameter bushing and a 3/4", 14 degree dovetail bit. The set up is simple and can be repeated with ease. Place the jig along the layout line, set the depth of cut at 1/2" and plow the cut to the 2-1/2" line. After the first cut, and with the router off, slide the bit to the back of the cut and draw a line where the base sits. This will be the stopping point of each cut in this operation.*



10. *Next, layout and cut the half tail socket on the interior of the Sides for the Case Top Rail.*

Lingerie Chest



Create the 7/16" x 3/4" rabbet on the back edge of the Sides for the backboards. I use the table saw in a two step method. First cut with the interior of the Sides against the saw, then the second cut as shown.



The Rear Case Top Rail is to be dovetailed into the sides. While this layout will not help to keep the Sides from separating, the backboards will complete this task, it does prevent the piece from being pulled out of the case if you would lift from the top. Complete the joint for both ends of the rail.



To create the dado for the inside drawer dividers and runners I use a 1/2" pattern bit in conjunction with another plywood straight edge. Set the cut to a 3/16" in depth and stop at 1-1/4" from the front edge of the sides. Use the chisels to square the ends of the dado.

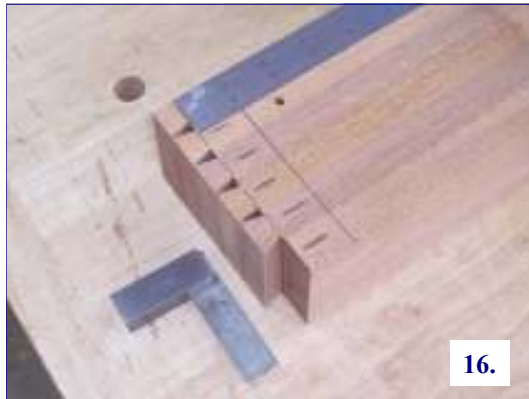


Mill the material for the front drawer dividers according to the cut sheet. Mill an extra piece of scrap for set-up. Use the same bit for the dividers as you used to cut the slots to insure a match for the joint. Set up the cut in the router table.



First set and adjust for the height of the cut, then adjust for the width of the tail. The operation needs to be in this order because each adjustment of the height will in turn, change the width. A snug fit is what you are looking for in this step. If it is too tight the joint will not go together (Glue will swell the pieces a small amount). You know the problem if the joint is too loose!

Lingerie Chest



The next step is to create the mortises for the drawer runners. Notice that the bottom divider is not dovetailed. It is simple cut to fit between the case sides. The mortises are centered in the dividers and are 1" in length.



Cut the 1/4" x 1/2" x 1" mortises using a step method. Plunge one cut, skip the second 1/4", and make the next plunge allowing equal pressure on all sides of the cut. Work the entire length of the mortise and then remove the remaining waste to complete each mortise.



Before doing any assembly, cut 3/4" off of the back edge of the Case Bottom. Once the rabbets of the Sides are complete you are able to get an accurate measurement. Add glue to the dovetail joints for the sides and bottom then slide them together. Add clamps to secure. Attach the Rear Rail and Front Rail with glue and clamps as well.



The installation of the dividers begins with the bottom divider. Add a line of glue on the piece, position it into the case and use clamps to hold it in place. Attach the divider with #8 x 1-1/4" screws through the Case Bottom.

The balance of the Front Dividers are attached using glue at the sliding dovetail area. You may find that you need a bit of persuasion to align the joint. Use a scrap so as not to damage the divider.



Lingerie Chest



21. The top is to be attached to the case with wooden clips. The slots are cut using a biscuit cutter and you need to make two passes. The first cut is from 3/4" to 5/8" while the second completes the groove at 1/2" down from the top edge. The clips are 7/8" w x 3/4" d x 2-1/4" l and the tongue is a 1/4" x 1/2".



22. Mill the material (dividers, runners and guides) for the interior drawer area. Cut and fit the Dividers into the dados created in step #13. Fit the drawer runners into the dados directly behind those dividers. Attach with glue at the front few inches and brads at the rear of each piece.



23. Create the Interior Side Spacers for the drawer area. Cut the pieces to size and add a 3/16" round-over edge detail. Install the piece with glue and brads at the front edge of the dividers to lessen the width of these drawers so that they will slide between the doors when fully opened. Install the drawer guides as shown.



24. The Runners for the exterior drawers are next. Make a 1/4" tenon on one end of a wide piece of secondary wood. Once the tongue is fit to the mortise in the dividers, rip the board into the 1" strips that will be the runners.



25. I like to clip the ends for aesthetics. Use a framing square to draw the line for the runners squared off of the case front. The runners are installed using glue for the first 4" and a single nail (N-7) near the back of the case. Pre-drill a hole through the runner and nail to the case side.

Lingerie Chest



Mill the pieces for the base frame to size. The Base Frame Front is mitered at 45 degrees on each end. The Frame Sides are mitered at the front end and have 1/4" x 2-1/4" x 1-1/4" mortises at the rear. The Frame Rear Rail has a tenon on each end. The tenons are created at the table saw by setting the blade to a 1/4" in height and placing the fence at 1-1/8" away from the blade. Make a pass on all four sides of the Rear Rail to create the shoulder cuts.



Next, use the tenon jig to complete the cuts for the cheeks. The rest of the waste material is removed at the band saw to complete the tenons.



Cut for #20 biscuits at the intersection of the Front and Side Frame rails, and glue into the mortises and onto the tenons. Slide the joint together and clamp. Install the biscuits with glue into position at the front and add the clamps.

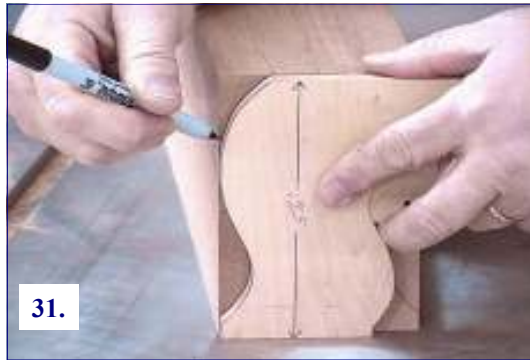


Clamping the Base Frame in this manner is most effective. You will need to work all four clamps in unison to accurately close the joint and square the frame. Set aside to dry!



When the Base Frame is dry you can create the edge detail on the frame. Mould the front and both sides, but not the back. I have added a scrap along the rear rail to keep from allowing the bit to roll around the corner as you route.

Lingerie Chest



Develop the profile of the foot from the plans and transfer it onto plywood to use as a pattern. Trace that pattern onto the ends of the stock that you will use as your feet. Raise the blade to the apex of the lower portion of the cyma curve in the foot layout.



Next, set an auxiliary fence at an angle to the table saw blade, removing the original fence. To orient that fence into the correct position you need to use the stock with the patterns. On the lead in end align the blade, just as it falls below the table surface, with the foot layout as shown.



The same method is used to set up the following end which is closest to the auxiliary fence. How you move the auxiliary fence will result in a perfect set-up. Maneuver the pieces along with the fence to achieve the correct position.



When the settings is correct, lower the blade and take several cuts over the blade raising the blade incrementally as you go until the full height of the curve has been reached.



Remove as much of the balance of the waste material at the table as possible. Two passes may be needed to accomplish this step.

Lingerie Chest



Use the foot pattern to layout the necessary feet. Here you will need to make sure that you have three feet from each blank and that they are three feet facing right as well as three feet facing left. Mark the hole of the spur with a small drill bit.



Move to the drill press to remove the area that will create the spur using a forstner bit.



Cut free each foot profile along the layout lines at the band saw.



Set one of each profile of the feet aside for use as the rear foot on the case side. The remaining feet will be paired to make the front foot assemblies. You need to cut the 45 degree miter on each of these feet. The first two will be cut with the set-up as shown. The stop block helps to keep the blank from moving away as the blades cuts.



The second pair will be cut with the miter gauge reversed in the same slot of the table saw. Here you can see that I have employed the use of a push stick. Because we want to cut with the top of the foot, or the longest side, against the miter fence, we need to hold the foot against the fence as we guide the blank through the cut. The push stick makes this a safe job!

Lingerie Chest



I cut the slot for our spline while the blade is tipped to 45 degrees,. This cut into a 45 degree cut results in a groove that is 90 degrees to the miter. Create the 1/4" groove by making two passes at the blade.



Now is the time to assemble the front feet for the chest. A plywood spline will reinforce the foot for many years. Add glue, install the spline and to hold the feet in position as the glue dries I use Duct tape. Wrap it along the top edge of the feet and one complete wrap at the bottom edge.



The rear Case side feet that we set aside before will be dovetailed to the secondary blanks. To create the dovetail sockets I complete the layout and use a forstner bit to hog out as much waste as possible. Clean the openings with a chisel and you are ready for the next step.



Scribe a line on the secondary blanks that matches the depth of your dovetails then align the ogee foot onto the blank and transfer the layout line of the socket. Cut those as we did in step #7 and fit the blanks to the foot. Remove some of the extra material from the secondary blank by cutting at the miter saw. This again is done for aesthetics as much as anything. When ready assemble the pieces with glue.



Sand each set of feet at the spindle sander if needed.

Lingerie Chest



Final sculpt the face of the assemblies with the Shinto Rasp, planes and files. Sand the pieces to 180 grit and you are ready to attach them to the Base Frame.



Add glue, lightly, to the top edge of the feet and the area that the feet will meet on the Base Frame. Position the assembly and add clamps to hold until the glue dries.



I chose to use a stacked corner blocks for my feet. The grain of these small blocks is alternated with each piece. This will limit the amount of movement that you might find in cross grain blocking (notice the piece to the right of the cutting). I like to use hot hide glue for this step and when the blocks are ready, I true each piece and cut a 45 degree area of waste away. Straight blocking can be used for each wing of the foot assembly.



The glue blocks are positioned and attached to the feet and Frame with brads. Once the entire Base assembly is complete you can attach it to the case. Use #8 x 1-1/4" screws along the front edge and nails at the back. The screws will hold the relationship of the two steady and any movement will be forced to the back of the case which the use of nails will allow.



Next, create the transition moulding and attach it to the case covering the joint of the two assemblies. Use glue along the front piece and back the side pieces around 4"-6", then finish the installation with brads.

Lingerie Chest



Run the edge profile for the case top and it is ready to be installed. I selected a classic ogee bit for the top edge and a simple 1/4" round-over to soften the bottom edge.



Sand the top to 180 and attach it to the case with nails into the rear top case rail and screws through the wooden clips.



The under hung moulding is created with a roman ogee router bit and fit to the case just under the top. Add glue and brads as we did the transition moulding.



The work on the doors begins by milling the rails and stiles to size. Select the position of each piece and label it appropriately. I have chosen the right stile of the left-hand (or fixed) door to be the wide stile. This is the stile that the opposite door will lip. Each stile will get a mortise that is 1/4" x 1-1/2" x 1" in depth. They begin at 1/2" in from the end of the stile.

Once the mortises are cut you need to begin the work on the rails. The matching tenons are started with the shoulder on the flat sides of each rail. Set the blade to 1/4" in height and the fence at 7/8" away from the blade, then run the two sides over the blade. Next, raise the blade to 1/2" without changing the fence and create the cut on the edge of each rail that will be nearest the raised panel.



Lingerie Chest



Now, move the fence in exactly 3/8" and make the last cut that defines the shoulders. This cut is offset to create the haunched portion of the tenon that will fill the groove cut for the panel.



Run a 1/4" groove in the center of each rail and stile. That groove needs to be 3/8" deep into the piece. After removing a center cut, reposition the fence to a 1/4" from the blade. Run the cut the entire length of each piece, then reverse the piece and make a second cut at the same setting. This insures that the grooves is centered in our pieces. You want a snug fit, not tight.



Mill the raised panel to size and tilt the blade to 12 degrees at the table saw. You need to set the fence at exactly 3/16" away from the blade as it tips below the table surface. This will create the appropriate fit of the panel into the groove of the door frame parts.



Complete the tenons at the table saw for the cheek cuts and then at the band saw to finish the edge cuts.



Here are the completed rails and stiles. You can see how the haunched tenon fills the groove area of the stiles.

Lingerie Chest



To create a classic raised panel you need to set the saw blade so that the outer edge of the blade is flush with the outside surface of the panel.



With everything set you can run the first series of cuts to make the raised panel. Notice how the blade is just protruding through the panel. Also, cut the end grain first. This will help to minimize the tear out in the panel.



The first cut leaves an angled cut at the raised area of the panels. We need to remove that angle cut with the second series of cuts. The set-up for this cut can be the most difficult. You will need to raise the blade to just the height of the previously cut area and set the fence so that you are just nipping the 12 degree cut. You are squaring the cut area to the panels. Once set you can make the cuts on all four locations on each panel. Sand the angled portion and the back of each panel (the area that you not be able to get to after the doors are assembled) then glue the doors at the mortise and tenon joints making sure not to get glue on the raised panel.

The wider center stile gets treated differently. Here you need to not only create that matching 1/4" round over detail, but also form the lipped area that the second door will close against and cover the gap between that doors as seen from the outside. The Ovolo bit will handle this task. Set it up in the router table and use an auxiliary fence. Adjust the height of your cut first, then set the cutter to just leave a 3/8" flat area as shown. Test the fit of the doors in the case to see if you need to further cut this area. You will run this door with the raised panel flat against the table. Be careful not to rock the door frame as you cut.



Run a 1/4" round over profile on all four edges of both doors. Then set up a rabbeting bit and create a 3/8" rabbet on the top and bottom edge of both doors and the middle stile of operable door (shown on the left door in the picture). On the two outer or hinge edges of the doors create an 1/8" rabbet (shown on the right side in the picture).



Lingerie Chest



The drawer fronts are next. Begin the drawers by measuring the openings. Simply add an additional $5/8$ " to the length of the opening and a $1/4$ " to the height. Next use a $3/16$ " beading bit to profile the drawer edge. Create an $1/16$ " reveal on the profile. The interior drawers are cut to fit the openings less an $1/8$ " from side to side and a $1/16$ " from top to bottom. No profile!



At the saw, set the blade height to $5/16$ " and the fence $1/4$ " away from the blade. Make the cut on both ends and the top edge, with the drawer front against the fence.



Next, bring the blade height up to the top edge of the cut just made and set the fence to $3/16$ " from the blade. Using the T-square make the cut at each end of the drawer front. The piece will kick out! Test the fit by placing the lower edge of the front into the case. You want to see about an $1/8$ " gap when pushed tightly against one end of the opening. If it looks good, finish the cuts. If you need to, make a slight adjustment then finish the cuts.



Now, without readjusting the fence or blade height, cut the rabbet at the top edge of each drawer front. Check the fit in the case again by putting the drawer front into the case. You need at least an $1/8$ " of clearance for a drawer of this size. Wider drawer fronts could require a bit more gap at the top!



The sizes for the balance of the drawer parts can be taken from the Drawer fronts. Check these against the cut sheet. Once you have the drawers parts milled you need to layout and cut the dovetails. Remember that the drawer backs are $3/4$ " less in width than the drawer sides and you want the pins in the backs. Notice how each drawer back begins with a half-tail.

Lingerie Chest



With the pins completed in the backs use those to layout the tails in your drawer sides, transfer the layout directly. Complete the work on the tails and test the fit. Here you can see a tight fit as well as the offset in size between the sides and the backs.



Turning our attention to the Drawer Fronts. The layout to create these pins is a bit different from the backs. Now you need to begin the layout with a half-pin on each end of the fronts. Saw the lines that define the pins with your hand saw, remove the waste area with your chisels. This too will be the template by which you layout the tails, so keep the pins angled and less than a 1/4" at the smallest area.



Transfer the layout onto the sides to complete the drawer box. Cut the sides as we did in step #7. Test the fit of the tails and pins and adjust as necessary.



Next we need to create the 1/4" x 1/4" groove for the drawer bottoms. I use a 3-wing cutter that is set to 3/4" to the top edge. This corresponds to the offset between the drawer backs and sides. Run the groove on both drawer sides and the Drawer Front only. The drawer back is not grooved. Sand the interior of the drawer boxes and assemble with glue.



Mill the panels for your drawer bottoms, cut them to sizes according to your drawers and use the same set up that we used for the raised panels of the doors to make the angled cut. This time allow the blade to extend completely through the panel cutting an angle without the shadow edge.

Lingerie Chest



Slide the panel into the drawer boxes to test the fit and place a short line on the bottom, at the drawer back on the inside of the drawer. This is the height setting for the slot that the nail will extend through and hold the drawer bottom in position. A single pass at the table saw will make this slot.



At the saw, set the blade height to 5/16" and the fence 1/4" away from the blade. Make the cut on both ends and Sand the outsides of the drawer boxes and the completed drawer bottom, then lock the bottom into position with the nail. As the drawer bottom expands and contracts, the nail will allow for the movement and hold the bottom tight to the drawer back.



Slide the interior drawers into the case and align the front edges with the interior side spacers. While holding the drawers in place use a bit of glue and brads to attach the drawer stops as shown. One for each side of the drawers.



Next layout and cut the recess for the hinges. These are known as clock hinges because they are normally used for the lipped door on tall case clocks. This is the same application. First cut the lip of the door with a saw and remove the material until it is flush with the door edge. I like to use a 1/4" straight bit to clean the most waste from the hinge area. Then you need to finish with a chisel. I find it most helpful to add a block to the back of the door to stabilize the router as it is used.



The short leaf of the hinge should be flush with the door edge after it is installed. I also set the top edge of the hinge even with the inner edge of the rails.

Lingerie Chest



Fit the hinges to the case. Remove the drawers and position the doors to the case and transfer the hinge location onto the case. You have access to the hinges from the interior through the back of the piece. Scribe the hinge to the case with a sharp knife. The removal of the waste with the router setup is not so good in this scenario. You cannot clean all of the waste away. You need to complete the work with your chisel.



The fixed door, left hand door in my piece, set held with a simple catch that is located on the door back just at the top of the door. It is notched to allow it to lock over the Case Top Rail and attached to the door with a single #8 x 1" wood screw.

Final sand the exterior of the case and drawer fronts to 180 and prepare for the finishing steps.

