Easy Woodworking

Children's Table

With Biscuit Joinery

A. William Benitez

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A How-To Workbook By

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Introduction

In this Easy Woodworking book I will be sharing how to use biscuit joinery to build a children's table. I designed and build this table for the first time while demonstrating power tools for the Skil power tool company at Home Depot stores.

Several things to remember about building this table. First is that it was assembled using a Skil biscuit joiner but any biscuit joiner will work just as well. Secondly, you can build the table using other joinery methods if you choose, even dowels. It's entirely up to you.

The third thing to remember that this project plan is not carved in granite. Some of you may have good design skills and can alter the table to suite your needs. You could choose to make it larger or taller. You could choose to use plywood instead of the solid pine that I used because it was provided by home depot for my demonstration.

I definitely encourage you to use biscuit joinery because it will help you finish faster while still making a nice table.

An Easier Joinery Method

One of the first questions for Easy woodworking was what kind of joinery to use for the projects. Mortise and tenon, dovetails, finger joints, dados, etc., while definitely effective, are time consuming and not easy. Dowels were not the answer because I've never believed they were strong enough because of inadequate glue surface and they can be difficult to align.

Butt joints are certainly simple and fast but have little strength. However, this was resolved by the advent of the Biscuit Joiner or plate joiner that can be used to reinforce all joints. This one tool has helped me build many beautiful projects quickly and easily without complex joinery or holes to plug or fill. Sharing the many ways the Biscuit Joiner served me then and still does is a major reason for this book

About Biscuit Joinery

Biscuit joinery is the main method for Easy Woodworking. The Biscuit Joiner is the powerful, inexpensive and necessary tool for Biscuit Joinery.

This is the second book in the series about Easy Woodworking and contains complete instruction and drawings for building a children's table using the biscuit joiner.

In addition to all the instructions, materials list, and drawing, it includes an email link you can use to contact me with any questions.

The instructions are not complex and with the drawings, the table should be easy to cut and assemble.

Also included are some final notes that should be of great help to anyone making use of the Biscuit Joiner.

Below are a couple of images of an inexpensive model

My First Biscuit Joiner

In case you haven't already purchased your biscuit joiner, I've left details about my first purchase. The Biscuit Joiner brand was Virutex and it was made in Spain. At $335.00 it was a lot of money for me at the time but I could see it was a joinery breakthrough.

Like most Biscuit Joiners, the instructions with it were inadequate but sufficient to get me started and it was promptly saving me time in delivering quality cabinets and furniture.

Since I had never seen a Biscuit Joiner before I didn't know other companies made them. I now know there were other brands available, especially the commercial model Lamello. Now many other power tool companies have added Biscuit Joiners to their tool lines and the prices begin as low at $80.00.

At first some companies even developed conversion kits to attach to grinders or routers to make Biscuit Joiners but I've always felt it was better to buy a tool that was originally designed as a Biscuit Joiner.

My emphasis on the Biscuit Joiner is not meant to diminish the value of all the tools you would normally use in woodworking. They play an important role in woodworking but the Biscuit Joiner is an extraordinary and easy to use tool for joinery because it allows you to create strong and easily aligned joints on almost any cabinet or furniture project. Most importantly for a professional woodworker, it saves time without affecting quality.

Using The Biscuit Joiner

Much of this chapter was in book one on projects and methods but I'm leaving part of it in each of the project books so you can refer to it at anytime while building one of the projects.

Using a biscuit joiner is not difficult but getting good results does require careful handling. Biscuit joiners cut a matching slot on two separate surfaces. Then the two surfaces are joined together by placing a compressed wood biscuit or wafer with glue into the matching slots. Because it can make the work go faster, some Biscuit Joiner users tend to rush and carelessly align the tool with the work. This can create joints that are sloppy, weak and often unattractive.

Because the biscuits (wafers) are made of compressed beech, they begin swelling immediately upon contact with the wet glue. This facilitates short clamping times. The momentary looseness of the biscuit as the glue dries allows for minor adjustment of the two parts during clamping to make certain the parts are perfectly aligned.

Unlike with dowels, minor adjustments are possible before the glue sets. It is a short open time but it does provide a unique advantage. Naturally, you can't make up for major sloppiness with these adjustments because it is only about 1/32 inch but it can be very helpful during assembly of projects.

As soon as the glue dries you have a strong joint. The biscuits provide a great deal more strength than dowels because they have at least twenty times the glue

surface but, more importantly, all the glue surface is on the long grain of the wood. Because of the round shape of the dowels, much of the glue surface faces the end grain of the wood which doesn't glue well.

The more knowledge you have about how to use the Biscuit Joiner the better, easier, and faster your work will be. The next paragraphs contain some tipsI have found helpful when using biscuit joiners.

The first tip is one few people have the patience for but it will save you time and frustration. Make a test cut every time you change the settings on your biscuit joiner. When you change the size of the biscuit, check for correct depth. The correct depth is slightly more than one half the overall depth of the biscuit. Place the biscuit in your test cut and make a pencil mark across the biscuit at the edge of the board with a sharp pencil. Pull out the biscuit and notice the relationship of the line to the center of the biscuit. The pencil mark should be slightly past the center of the biscuit, but only slightly. Don't make the slots too deep. Check the location relative to the edge of the material or the center of the board. If the depth and location are correct you can proceed to cut the slots in the actual work. This does consume time but not as much time as making your cuts incorrectly and winding up with a flawed assembly. This one step will save you many mistakes.

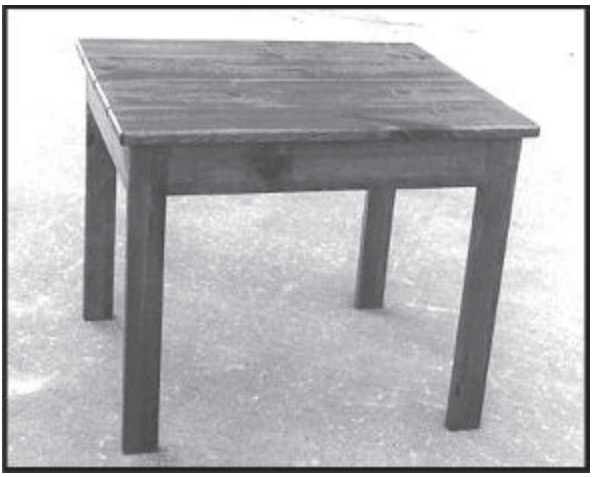
Since the accuracy of the biscuit slots is critical to successful biscuit joinery, always make certain the face of the biscuit joiner and the face of the fence are tight and flat against the surfaces of the material to be cut. This is best done by clamping the work piece and controlling the Biscuit Joiner with both hands. This helps you line up the cut and maintain a steady position

keeping the Biscuit Joiner from shifting during the cut. Start the biscuit joiner and make certain the torque of the motor has not caused the Biscuit Joiner to move before making the cut. Movement during the cut can cause the blade to enlarge portions of the slot causing poor fit of the wafers. Even if the slots do not enlarge, movement can impede accurate alignment and cause problems during assembly.

Obviously, using the biscuit joiner carefully is important if the two slots are to align properly. As with any woodworking tool, careless handling will lead to poor results.

Please contact me with any questions at awbenitez@hotmail.com .

Children's Table



Materials List: For this project I suggest white pine that is readily available. You will need only 2 - 8 foot pieces of 1 X 6 for the entire project if you layout carefully before cutting. All the dimensions are clearly described in the drawings. Just cut the following rectangular pieces and then cut the shapes as described in the next section.

4 - 3/4" X 5" X 24" 2 - 3/4" X 3" X 18 1/2"
2 - 3/4" X 3" X 17" 4 - 3/4" X 2" X 19"
2 - 3/4" X 3/4" X 15 ½"

Cutting the Parts: The parts for this project can be cut entirely with a table saw. Cut the pieces for the Table Top first. Cut 4 pieces of the 1 X 6 - 24 inches long. Rip each of these four pieces to 5 inches wide. Next cut the Aprons. To make better use of the material, cut four pieces of 1 X 6 - 19 inches long. Rip a 3 inch wide piece from each of the

four 19 inch pieces. Cut two of the 3 inch wide pieces to 18 1/ 2 inches long and two to 17 inches long. Next rip a 2 inch wide piece from each of the left over pieces. From the last piece of 1 X 6 you have left, rip 4 pieces 5/8 inch wide. Cut two of the 3/4 inch pieces 15 1/ 2 inches long.

Sanding the Edges: Sand all the edges lightly with a belt sander to remove all excess roughness. Take care to keep the sander upright and moving smoothly to avoid gouging the wood. Clamp each piece tightly before sanding.

Routing the Edges: Only the edges of the Table Top pieces require routing. Select the top faces and mark the bottom face of all four Table Top pieces. Next place them edge-to-edge on your worktable checking the fit and moving pieces around for the tightest possible fit. Sand the joints that remain open more than a fraction with a belt sander to improve the fit. This step can also be done with a hand plane or a jointer. Once the fit is acceptable, flip all the pieces over and realign them face down. Then make a large V mark across the bottom face of all four pieces to make certain you will remember how they come together. When it is time to assemble the Table Top, the V must come together for the pieces to be in the correct position. Now mark an X on the top and bottom face of each edge that will be routed. Start by marking an X on all four edges of all four pieces on the top face. Now flip the four pieces over maintaining the same relationship to each piece and mark the bottom face. On the two outside pieces mark the two ends and the outside edge. On the two inside pieces mark only the two ends.

Place a 1/ 4 inch round over bit in your router and set the depth of the bit for a standard 1/ 4 inch round over as shown in the drawings. Then round over the edges that you marked with an X only. These pieces are large enough to

clamp and use a handheld router. My preference with most small projects is to use a router table. It is a much safer and easier operation with a router table. Round over each piece and return it to its proper position on the worktable with the bottom face up. In this position you are prepared to mark the biscuit locations.

Biscuit Layout and Cutting: Start by laying out and cutting the biscuit slots for the Table Top. Place the four Table Top pieces on your worktable face down. Arrange them so the V mark that you previously made comes together correctly. Measure along each joint with your tape and mark across both boards at 2 inches, 7 inches, 12 inches, 17 inches and 22 inches. Do this on all three joints. Take the first piece and clamp it to the worktable face up. Clamp each piece overhanging the edge of your workbench so the biscuit slots can be cut. Set the fence of the biscuit joiner to 1/ 4 inch deep and set the depth of cut for a size 20 biscuit. Place the fence of the biscuit joiner flat on the work piece and align the guideline on the first mark. Cut the biscuit slot and repeat the same process on the one edge of the outside pieces and both edges of the inside pieces. Put the Table Top pieces aside for now.

Get two of the Legs and one 18 1/ 2 inch Apron and place them on the worktable. Flat on the table, arrange them in correct order. The two Legs on each side of the Apron and flush with the top edge.

Measure down the joint 1 1\2 inch and mark across the two pieces. Repeat on the other joint. Clamp the Apron on the worktable and cut the biscuit slots in the same manner as before. Now clamp down each of the Legs and cut the slots in them. Place the other two Legs and the other 18 1/ 2 inch Apron on the work table and repeat the process.

Get the shorter Aprons and place them flat on the worktable. Place two of the Legs against them correctly. The correct position is on edge, against the Apron and flush with the top. To make certain that the Legs are properly oriented for this, check that the line used to cut the previous biscuit slots are on the outside surface and on the top edge of the Leg. Check this carefully or you will cut the biscuit slot incorrectly. Now measure down from the top edge of the apron 1 1/ 2 inch and mark both ends. Using a small square, carry the lines down to the outside edge of each Leg and mark the location of the biscuit on the top edge of the Leg.

Repeat this process with the other apron. Clamp these Apron pieces to the worktable and cut the biscuit slots as you did with the other Apron pieces. Now clamp the Legs upright with the outside edge facing up. Now place the fence of the biscuit joiner on the leg edge and the base against the Leg and align the biscuit joiner with the mark. Cut the biscuit slot and repeat this process on all four legs. When making these cuts always make certain that the fence of the biscuit joiner is flat on the edge of the leg and the face of the biscuit joiner is flat against the work piece. This will ensure accurate, properly aligned cuts.

Sanding: It is always easier to sand project parts prior to assembly. Use a random orbit sander or an orbital sander with 120-grit sandpaper to clean up all the imperfections on the surfaces. Do not sand off the biscuit marks or the V mark on the tabletop pieces until after you have glued them together. Also hand sand all the round overs that you routed. For the most part these round overs will be smooth enough but when you rout across the grain it tends to get rough. Sand all the rough areas to ensure a smooth finished product.

Assembly: Assembling a project using biscuits requires a little planning. If you don't plan the process you may wind up placing glue in a biscuit slot and having to turn the piece upside down allowing the glue to flow out and make a mess.

The first step with the assembly of this project is to assemble the Table Top. Start by putting glue in the slots on one of the outside pieces. Remember to use the glue sparingly. Use a glue bottle tip that has a small round opening and run a thin bead of glue just inside each slot on both sides. If you have done this properly the slot will not fill up and the glue will not ooze out when you insert the biscuit. If the glue oozes out you are using too much glue. Lighten up before you continue. You can also use a small art brush to spread the glue smoothly in the slot. Make certain that the biscuits are completely inserted by tapping them lightly with a mallet. Now take the Table Top piece that belongs next to that one and put glue in the biscuit slots. Align the board with the biscuits in the slots and tap the boards together with the mallet. Put the two pieces aside for a moment. Get the other outside piece and repeat the procedure. Now put glue in the slots of one of the pairs that are assembled and insert the biscuits. Put glue in the slots on the other pair and assemble them. Make certain the ends are aligned. Now clamp the boards together tightly.

Make certain that the boards do not curl up. Check this carefully. If the boards are curling up use clamps to take the curl out while the glue is still wet. You may need clamps on the top and bottom to maintain flatness. After the top is completely flat lay it aside to dry before doing any further work to it.

To assemble the Legs and Aprons, start with the first set that was cut for biscuits. Put glue in the slots on each end

of the Apron. Tap in the biscuits. Put glue in the slots on the edge of each Leg and quickly insert the biscuit in the Apron into the slots. Once the Apron is inserted into the two Legs, tap them tightly and then clamp it. Put this aside and do the other corresponding set. When assembling these Leg sets make certain that the marks you made are on the same side to assure that you are assembling correctly.

Check both assemblies for squareness. Remember, this can be done with a square or by measuring the diagonal. Both diagonals must be the same or the assembly is out of square. If the assembly is out of square, the final assembled table will not sit flat on the floor.

After the glue has dried, release the clamps. Put glue into each end of the remaining Aprons and tap in biscuits. Lay one of the assembled Leg sets on the worktable with the biscuit slots facing up. Put glue in the slots and quickly insert the Apron biscuits. Make certain that you line up the marks for correct orientation. Now lay the other Leg set down on the worktable and put glue in the slots. Grab the Leg/Apron assembly and turn it over so you can insert the Apron biscuits into the other Leg set. Put the table leg structure upside down on the worktable and clamp it together. Now flip it over, right side up and make certain the top of the Legs and Aprons are flush. Correct if necessary with a mallet. Next check for squareness. If there is a problem, it can be corrected by using a clamp diagonally across on the longest diagonal. Tightening the clamp will bring the project into square. Check frequently as you tighten the clamp and stop when you have attained the correct measurement. Also check that all four legs are flat on your worktable.

Allow the glue to dry and then install the 3/4 inch X 3/ 4 inch Strips. These Strips are used to attach the Table Top to

the table frame. Drill three holes through each 3/4 inch X 3/ 4 inch piece in each direction. Ream each of the screw holes slightly. Use 1 1/ 4 inch self tapping drywall screws to attach the pieces to the inside of the table frame. They should be attached to the sides with the short Aprons with the 3/4 inch side screwed and glued. Make certain the strips are flush with the top edge.

The final step for assembly is to fasten the Table Top to the table frame. Start by putting the Table Top face down on the worktable. Now place the table frame upside down on the bottom of the Table Top. Center the table frame correctly over the Table Top and then insert 1 1/ 4 inch screws through the holes in the Strips and into the bottom of the Table Top. Do not use glue here. There should be at least three screws through each of the Strips. To make things easier, leave the Table Top off until you have completed the finish.

Finishing: Sand the entire project lightly with 220-grit sandpaper either by hand or with an orbital sander. This is a very light sanding since you already sanded all the surfaces before assembly. If you want a darker color than the natural wood, apply a stain of your choice.

Follow the instructions on the stain can but remember that stains must be wiped thoroughly to remove all streaks. Allow the stain to dry overnight and then apply 2 or 3 coats of varnish, polyurethane or Deft. Sand by hand with 400-grit sandpaper between coats to ensure a very smooth final finish. I suggest you use a satin or semi-gloss clear finish for a smooth rich furniture look.

Table Top Option: For a Table Top without the grooves, much more work is involved. You must glue up the boards edge to edge. For this option, do not router the top and

bottom edges of the Table Top pieces prior to assembly. You can follow the same board selection procedure and mark the boards with the V as you would for the grooved job. You will also use the biscuits in the same manner, however, for this option the biscuits will only serve to align the boards to reduce the amount of final sanding.

Start by placing the first set of biscuits as before. This time instead of just placing glue in the second slots, spread the glue over the entire edge of the board. Put the first two boards together and then the second two boards in the same way. Now glue up the two sets in the center and your Table Top is ready for clamping. Clamp the pieces together snugly and align the ends with a mallet. Now tighten the clamps. To ensure that the Table Top remains flat, place clamps on both the bottom and top side of the Table Top. When you glue up boards like this, a lot of glue will ooze out. I suggest that you use newspaper over your bench before starting this job. Don't try to wipe the excess glue off the joints while it is wet. Allow the glue to set up for about thirty minutes then clean off the excess easily with a putty knife. Remove as much glue as possible because it will impede sanding when it dries. Wait overnight before removing the clamps. After the glue is dry, remove all the clamps. Use a paint scraper to remove any excess glue that remained. Use a belt sander with 100-grit sanding belts to sand both the top and bottom surfaces until the glue joints are clean and smooth. Always sand with the grain, not against it. The joints should be almost invisible.

When sanding with a belt sander it is essential to keep the sander moving. Move forward, backward and side-to-side but keep moving. Do not apply pressure down on the sander. Let the weight of the machine do the work even if it takes quite a while to clean up the joints. If you apply pressure the surface could easily be gouged and the sander

will be overheated. Plus, the excess friction may damage the belt. If you allow the sander to work with its own weight it will remain upright and not gouge the surface.

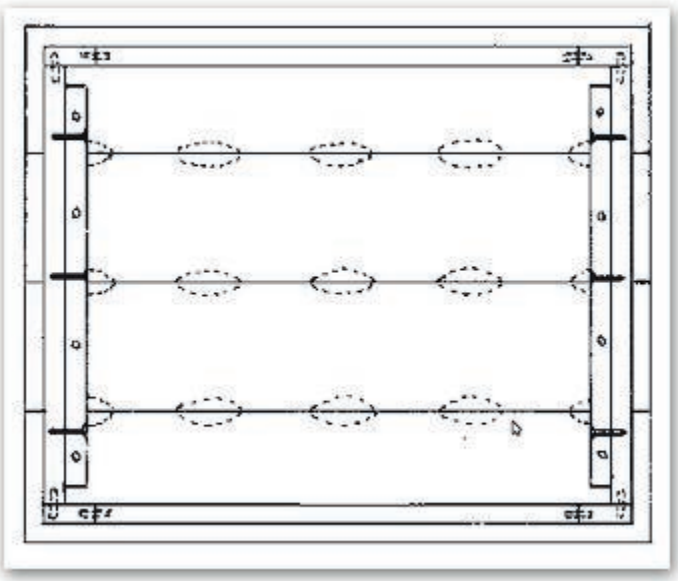
After sanding the faces, sand all the edges. Then sand the faces again with your random orbit or finishing sander to remove any scratches that the belt sander may have caused. Finally, rout the top and bottom edges and install the Table Top on the legs as previously described.

Finally, finish the table top as described for the rest of the table.

Children's Table Drawings

Drawings are not to scale. Use listed dimensions

The first drawing is the entire bottom view of the table assembled. Notice that all the parts are show and the location of the biscuits are shown with dotted lines.

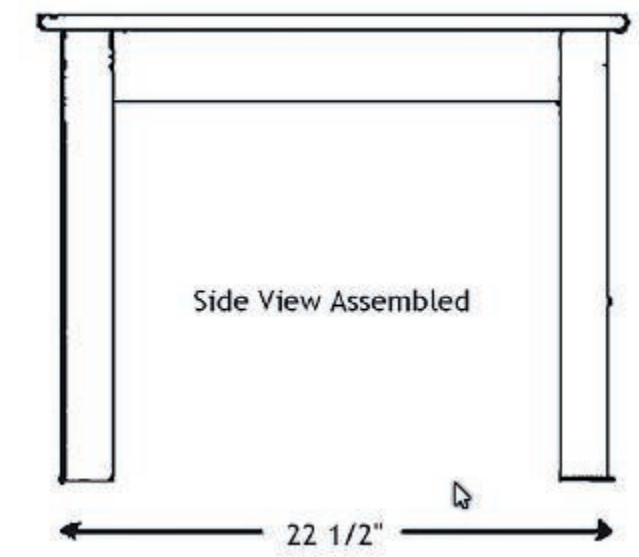


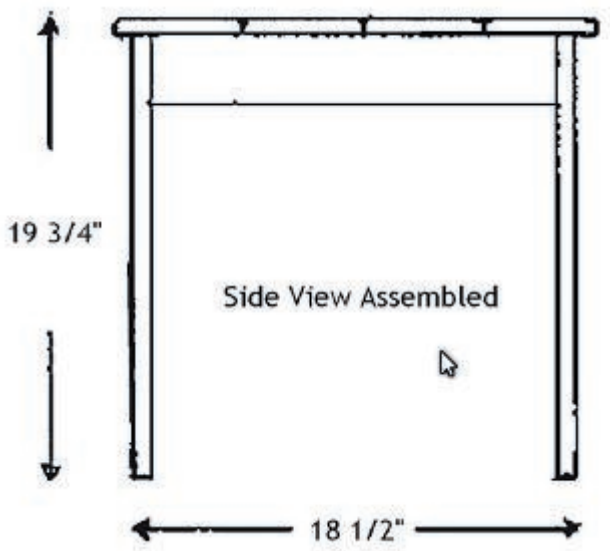
Bottom View Assembled

Use this view to guide you while following the details for assembling the table. It will help you to clearly see the location of each of the biscuits in the overall assembly.

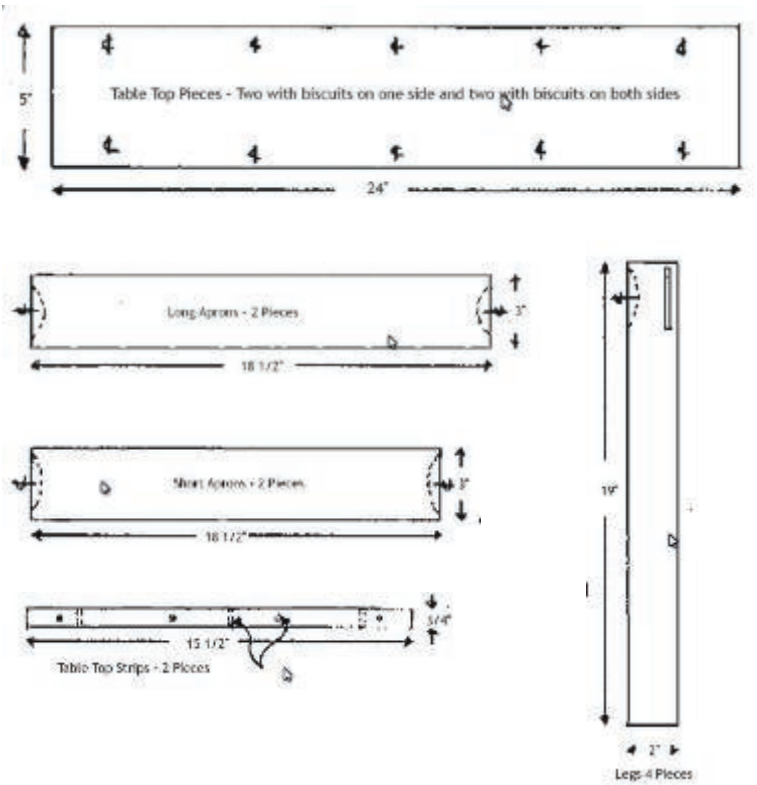
The table top pieces, the aprons, the legs and even the 3/4" by 3/4" pieces to hold the table top in place with screws is shown.

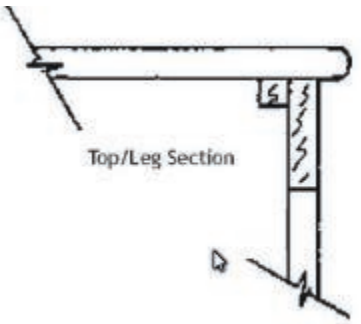
The drawings below show the two side views and you can see how the aprons fit into the legs.





The drawings below include the table top pieces, the long aprons, the short aprons, the table top strips and the leg





The drawing below is the table top assembled. It could be assembled as in the photo with the roundover on every joint or, it could be assembled without the roundover in which case it would be sanded first with a belt sander to remove all the glue marks and then final sanded with a random orbital sander. The last step would be to roundover all the outside edges. The choice is yours.

Biscuit Joinery Drawings

This entire chapter also appears in the original book. I leaving it in each project book so it can be of help for cutting the various biscuit joiner.The drawings of various joints that can be done with a Biscuit Joiner include details of how each joint can be used. Over the years I have used the Biscuit Joiner to make these joints for projects for myself and for customers. You can use these joints to assemble your own projects taking full advantage of the Biscuit Joiner.

I sincerely believe that using biscuit joinery can help you make excellent projects with strong yet easy to do joints whether you are a home woodworker or a part-time or full-time professional.

I hope that the joints described in these pages serve to interest you in biscuit joinery and lead to the creation of even more joints that can be made with the Biscuit Joiner.

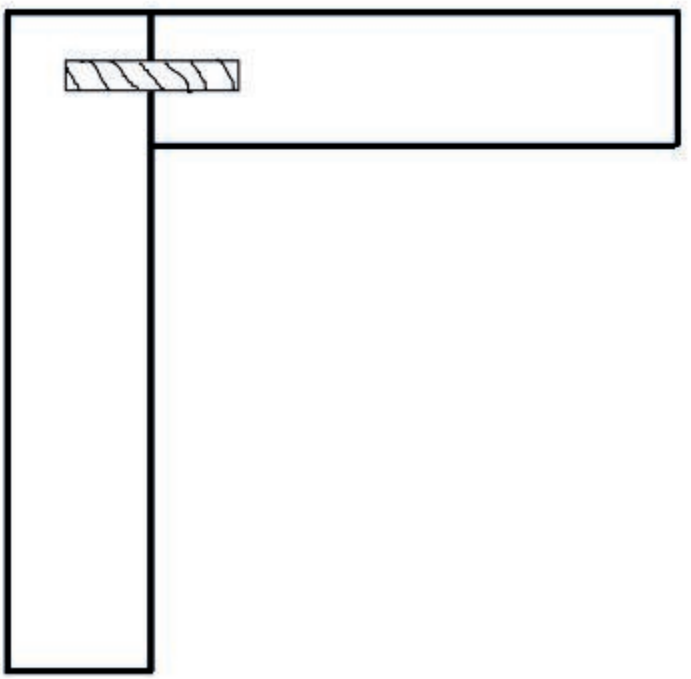
The Corner Joint

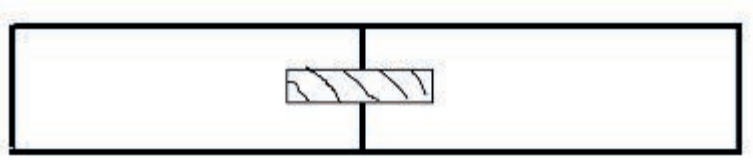
The corner joint is basically a butt joint which involves the edge or end of one board and the face of another. These joints can be simply the width of one board or the length of an entire sheet of plywood or MDF fiberboard.

The number of biscuits used on these joints is based on that width or length. On a 1X4 board only 1 size 20 biscuit will fit. On a 1X6 board you can fit 2 size 20 biscuits.

When doing joints like this it's important to remember that glue works best on long grain. That is the grain that runs along the length of a board whether on the edge or the face. The wood at the ends of a board, and at any location where you create an end by cutting the board, are called end grain. While you can use biscuits to attach an end grain to a long grain, it is not a good idea to join two end grain pieces even with good joinery. For the best possible joinery glue together pieces using the long grain whenever possible.

The end grain/long grain issue does not apply to plywood since the direction of the grain in the various





The Edge To Edge Joint

The edge to edge joint shown above is often misused because of a lack of understanding about gluing up boards. When gluing up boards edge-to-edge in order to create wider boards, it's important to remember that in this kind of joint the biscuits serve only to maintain the alignment of the boards while the glue is drying.

The biscuits may add strength but it's unnecessary on this kind of joint. That's because the glue joint, once dry, is stronger than the wood. So, if you didn't use the biscuits the joints would be stronger than the wood itself.

If you don't believe that, conduct a simple test to prove it to yourself. Just cut a half dozen pieces of 1X4 or 1X6 6 inches long and then glue them side to side without any biscuits. Once the glue is dry, take the glued up piece and put it against something at an angle and break it with your foot or a hammer. Then take the two pieces and break them also. None of the breaks will be on the glue line. The board will always break in the wood itself. So, if the glue joint is as strong or stronger than the wood, why do you need the biscuit.

What the biscuit does is keep the boards aligned with each other easily during the glue up. Normally, boards

will slip and slide because of the wetness of the glue but not with the biscuits in place. So just use sufficient biscuits to keep the two edges lined up with each other to help alignment and thereby reduce the need for so much planing or sanding to make the boards even.

When doing your glue ups remember a couple of important things. First, use lots of clamps so you maintain a tight joint throughout. Secondly, make certain the clamped pieces are straight and even with each other because you won't be able to correct that after the glue has dried. This is best done by placing clamps on the top and bottom of the glue up. Finally, clean off as much of the glue ooze as possible. I have found that the easiest way to do this is to let the glue set for 15 to 30 minutes and then use a sharp putty knife to remove the partially dried glue. This will avoid a lot of sanding later.

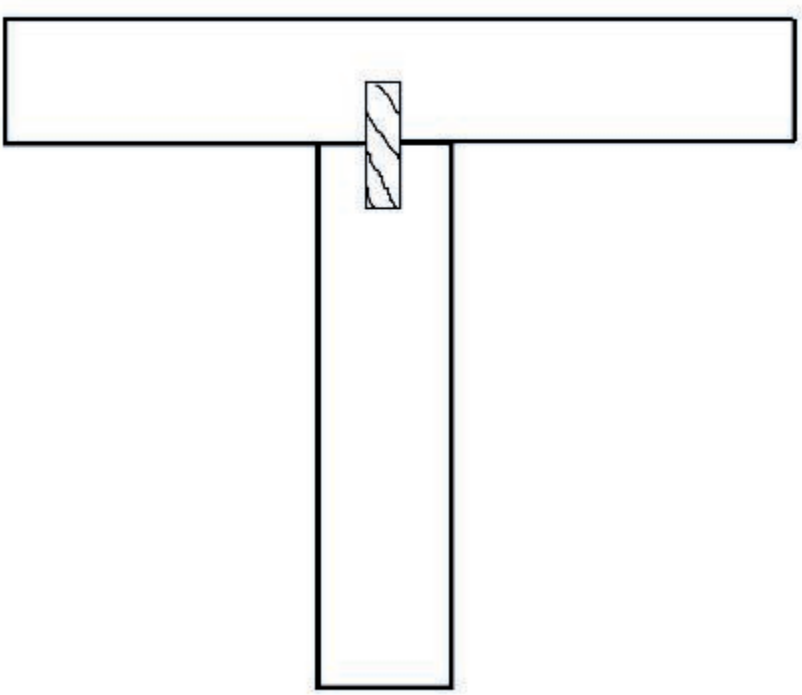
The T Joint

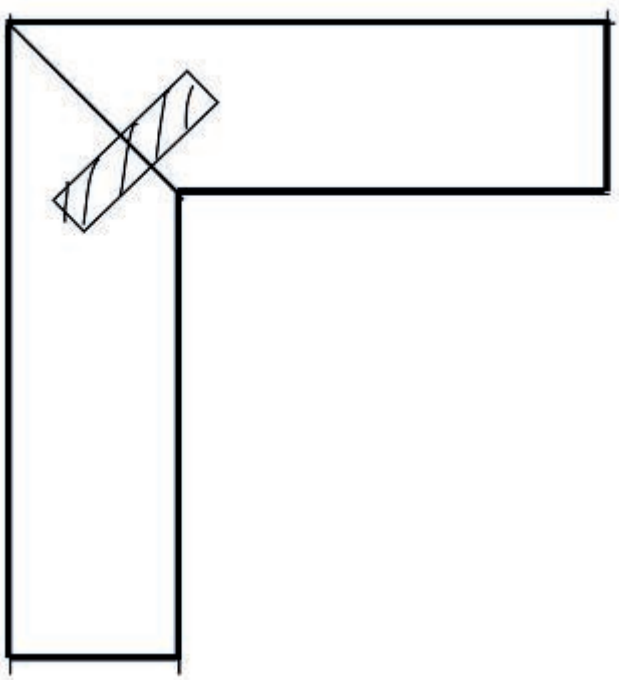
The T Joint shown on the next page can be used in many ways. I use it most often to assemble cabinets made of plywood or fiberboard. This joint can be used regardless of the length of the two pieces.

You could biscuit joint two full length plywood pieces or any other length by simply spacing the biscuits appropriately depending on the strength needed for the specific project. Usually you can place the biscuits with spacing somewhere between 6 inches and 12 inches. My suggestion is to opt for the closer placement. I believe that you can never make things too strong.

The T Joint can also be used on a much smaller scale to create dividers in a cabinet or drawer. Or, to create

a knick knack shelf unit with shelves at various levels and dividers. They can also be used for removable shelves or dividers by gluing biscuits into the sides of cabinets, cases, or drawers and then cutting slot into the edges of the dividers. Then the dividers can be slid over the biscuits when needed and removed when no longer needed. The dividers or shelves will remain in place. If it seems that the dividers are too loose on the biscuits, apply a very small amount of glue to the biscuits and wipe it dry. This will slightly swell the biscuit and tighten the fit.



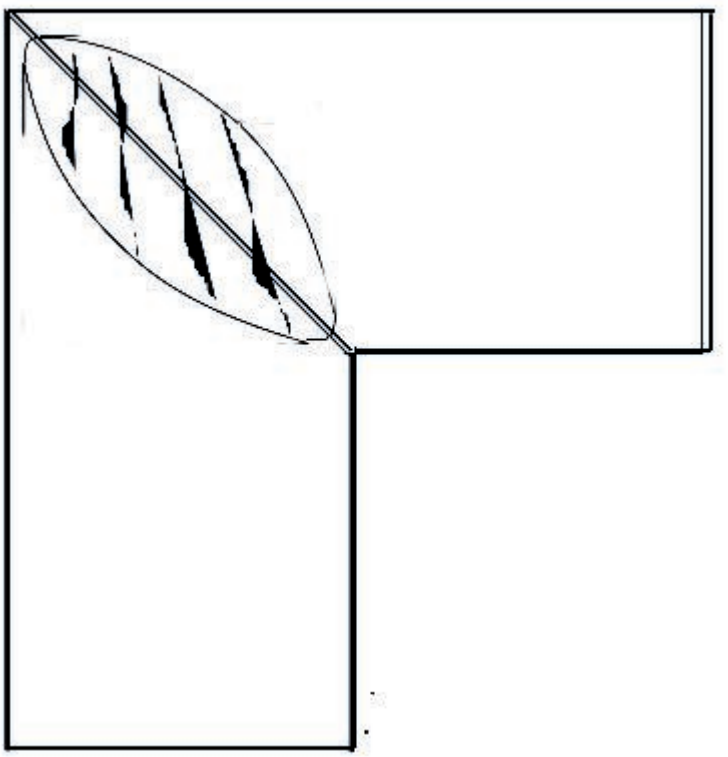


The Edge Miter Joint

Edge miter joint shown above comes in handy to assemble pieces of all lengths. You can use it to make small boxes or cabinets where it is important to hide end grain. The number of biscuits used is directly related to the length of the joint. I suggest that you use a biscuit every 6 inches for most joints.

To ensure a tight joint it's important to cut the miter carefully and then cut the biscuit slots with the Biscuit Joiner properly aligned. Failure in any of these steps can lead to joints that fit badly and are weak and unattractive requiring a great deal of filler and sanding. Taking a little extra time to produce accurate pieces ensures tight accurate joints.

There are various ways to cut the biscuit slots for edge miter joints. These are covered in detail in the section on using the Biscuit Joiner. For cutting these slots you can set the fence on your Biscuit Joiner to 45 degrees or 135 degrees if that setting is available on your Biscuit Joiner. My preference for this cut is to leave my Biscuit Joiner fence set at 90 degrees and clamp the two mitered pieces back-to-back to form a 90 degree corner. That accommodates my Biscuit Joiner with the 90 degree fence setting and gives me a more stable work surface for the cut.



The Frame Miter Joint

The frame miter joint shown on the previous page is used mostly for frames but you can also use it to make door frames. It is a strong joint for many uses. The size of the biscuit for each application is based entirely on the size of the frame. For smaller frames you may have to use a size 0 biscuit and for larger frames you may have to use several size 20 biscuits. The important thing is to use enough biscuits to ensure a strong joint.

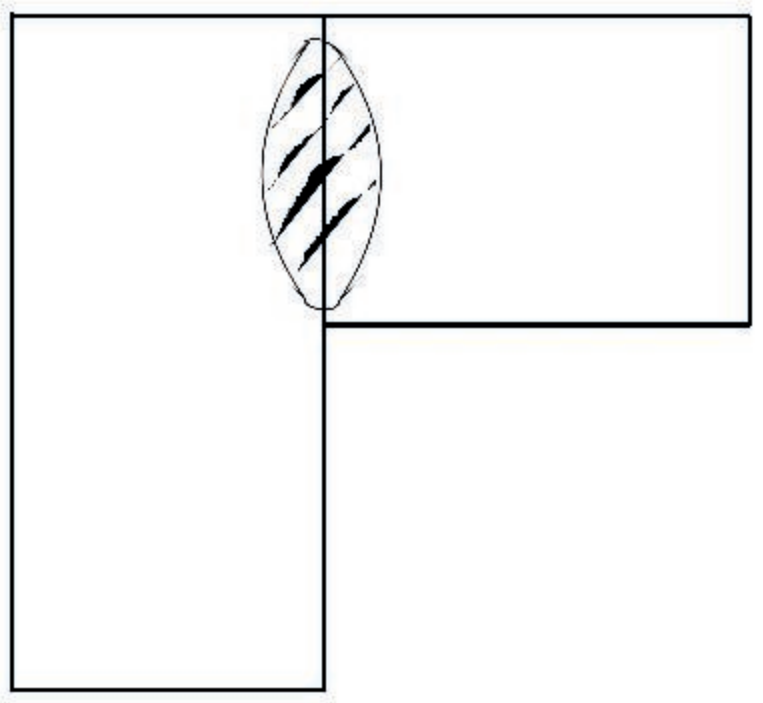
I prefer to cut the biscuit slots for frame miter joints using the Biscuit Joiner without the fence but you can also make the cuts using the fence. For materials thicker than 3/ 4 inch you can use a second biscuit. I would cut the slot for a second biscuit by using a spacer for the second cut but you can adjust the fence. Some users are more comfortable with the fence and accuracy can be maintained with either method.

The Square Frame Joint

I use the square frame joint shown on the next page to make doors for cabinets and furniture. All the doors for the projects in the project books were made using the square frame joint cut with my Biscuit Joiner. It is a strong joint that I have used for many years on hundreds of projects.

I always cut the biscuit slots for this joint using the Biscuit Joiner without the fence. By clamping each piece to the work table and then guiding the cut with the base of the Biscuit Joiner on the work table. The blade of the Biscuit Joiner is set perfectly so when the base is on the work table the cut is centered in a 3/ 4 inch thick board.

The exact same procedure works with thicker materials simply by using spacers between the base of the Biscuit Joiner and the work table surface. For 1 inch to 1 1/ 4 inch thick material I would use a spacer for a second biscuit. For 1 3/ 4 inch thick material I would use two spacers of varying thickness and use three biscuits in the joints. This give you an extremely strong joint by creating six glue surfaces for each piece of the joint.



The Offset Joint

The offset joint shown on the next page is useful to add solid wood pieces to the edges of plywood or fiberboard sheets. The number of biscuits used along this joint is determined by the strength that is needed for the particular cabinet or furniture piece.

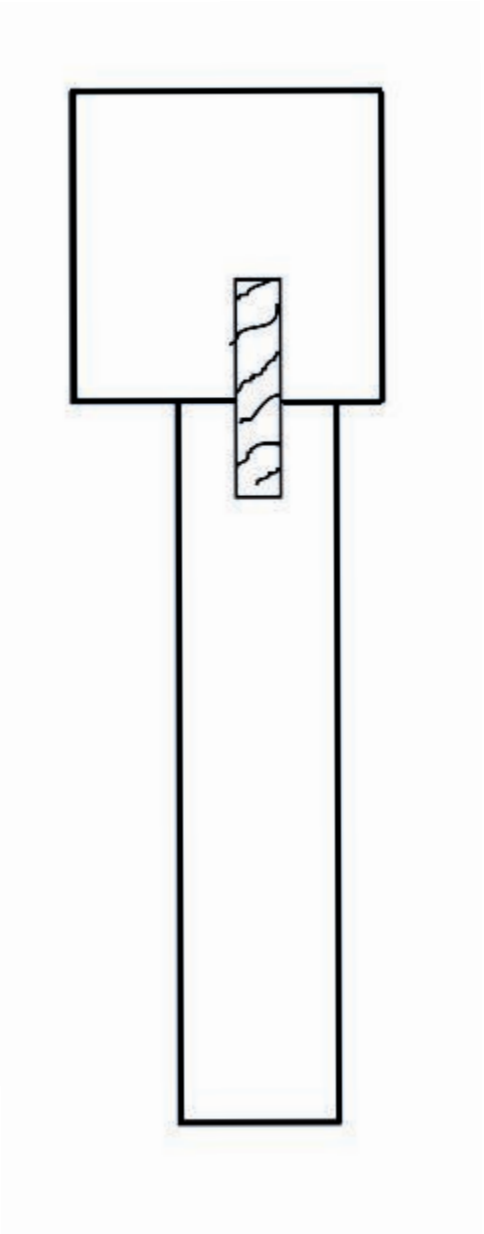
This joint can also be used to form a strong corner for a cabinet or furniture piece. By applying a second plywood or fiberboard piece in the same manner you can form a 90 degree corner that is decorative and protects the sheet goods from damage. To make it more attractive you can round over all the corner pieces.

Years ago I was commissioned by a hotel to create a rugged design for their lecterns because they were always handled roughly. They wanted the lecterns to be made of oak plywood instead of veneered fiberboard and they wanted it to have strong corners that could be easily refinished if damaged.

I came up with a design using 3/ 4 inch thick oak plywood for the basic box with 1 3/ 4 inch X 1 3/ 4 inch corner pieces rounded over with a 1/ 4 inch round over bit. I then assembled the units with the corners extending 1/ 2 inch beyond the face of the plywood and assembled the pieces with biscuits every 6 inches throughout every joint.

The lecterns were built over 25 years ago and are still holding up well. The corners have been sanded and refinished on some of the units because they have been run into walls or corners in the hallways but the plywood surfaces remain in good shape because they are protected by the extending corners.

In this case the offset joint served a dual purpose because it added a decorative feature to the lectern and protected the plywood veneer from normal damage.



The preceding drawings are just basic joints that can be created with the Biscuit Joiner. It is certainly not every possible joint which can possibly be created with this tool. If you are going to bond two pieces of wood to each other in some manner, chances are that biscuit joinery can be used to reinforce that joint.

Anytime you are designing a project consider the possibilities of joints made with a Biscuit Joiner. Even if you have project plans that include details on a different kind of joinery, why not consider using the Biscuit Joiner instead.

Whether the power tool is a table saw, circular saw, jig saw, scroll saw, router, sander, planer, or Biscuit Joiner, it's been my experience that we often fail to explore the full potential of a tool. Making full use of the Biscuit Joiner will help you to create projects with strong joints while still saving time. For the home woodworker that means quality projects completed faster. For the professional woodworker it means that and the potential for increased profit.

Final Notes

What follows are some notes that you may find useful when using a biscuit joiner. Much of the information appears in the original book on projects and methods but has been left here as a reminder . I hope they are of help to you.

Edge-to-Edge: Remember when gluing boards edge-to-edge the only purpose of the biscuits is to align the boards so that major planing or sanding will not be necessary after the boards are glued together. The biscuits are not necessary for the strength of the joints. When boards are glued together edge-to-edge the glue joint actually becomes stronger than the grain of the wood.

Order of Glue Up: As you check out the information in this book and the project books, you will find details on the order of glue up. These may seem unimportant but following the instructions will save you from a glue mess that is difficult to clean and can lead to excessive sanding. Take a little extra time to glue things up in the best possible order and you will save time in the long run.

Slot Cut Mistakes: If you use the Biscuit Joiner regularly there will probably be some misplaced biscuit cuts. This is an easy problem to resolve by simply gluing a biscuit into the slot, let the glue dry, use a hand saw to cut the protruding part of the biscuit off, and then sand down the surface or edge and you are ready to make the cut in the correct location with just a minor delay.

Sand Before Assembly: Once you have all your pieces ready for assembly, do all the sanding before you begin. Your project should be ready for the finish once it is assembled. Many projects have inside corners that are difficult to sand properly once assembled. Save yourself all that work by finishing the sanding first.

Choosing The Right Biscuit Size: The choice is simple, always pick the largest biscuit that will fit in the joint that you are creating. This will always give you the maximum amount of glue surface for maximum strength.

In addition to the three basic sizes, 0, 10, and 20, there is a size called FF which stands for Face Frame. This is a smaller size used for attaching face frames to cabinets. There are also some micro size biscuits available for very small jobs but for these you need a smaller, specialized Biscuit Joiner because these biscuits are also thinner. I have not used these smaller sizes as the three regular sizes have always been adequate for my purposes.

Cutting Miter Joints Using Fence at 45 Degrees: In the chapter on Biscuit Joiner methods I show you how to cut the biscuit slots on a mitered corner using the fence set at 90 degrees and at 135 degrees. These are the two methods I believe to be safest and most accurate but you can also make this slot cut by setting the fence at 45 degrees.

For this you would put the fence on the short point side of the board and the face of the Biscuit Joiner against the miter. This method feels less accurate and I recommend one of the two methods previously discussed.

Biscuit Joints Versus Mortise and Tenon: This is truly a no brainer. If you have ever built a project using mortise and tenon joinery, as I have, there will be no doubt in your mind that mortise and tenon joints, when done correctly, are considerably stronger than biscuit joints. However, mortise and tenon joinery is truly difficult and time consuming for anyone with limited skills and it's unnecessary for most projects.

Mortise and tenon joinery is an excellent method and if you have the time and inclination I would definitely advise you to try it at least once if for nothing else but the sense of accomplishment.

Thanks for reading this book and please look out for the next ones.

Safety Notes

POWER TOOLS ARE INHERENTLY DANGEROUS. Any tool that cuts wood can also cut skin and bone. Keep this in mind every time you use a power tool. Plan every cut carefully before starting the tool. Clamp work pieces securely before cutting, routing, sanding or using a Biscuit Joiner. Read and adhere to the safety guidelines that came with the power tool.

These guidelines are written to help you avoid serious injuries. Here are a few more simple hints that will help you avoid injuries. While it is best to use both hands to control power tools, if you are using a power tool with one hand, always check where the other hand is before starting the tool. This may sound silly but it is a good way to keep all your fingers.

Whatever cutting, routing, planing, jointing you are going to do, take a moment to review the procedure in advance. Visualize the complete procedure before you start. Doing this will often allow you to realize mistakes that you may have made without thinking. An extra moment before proceeding could help you avoid potential kickback or other injury causing incidents.

If you believe that these extra precautions are not necessary for you because you are so proficient with the tool, please think again. It does take time to be careful and use power tools safely but not nearly as much time as a serious injury can take out of your life.

Never use power tools if you are tired, taking medications or using alcohol or drugs. This is a sure way to get hurt. Always use ear and eye protection and dust masks when needed. Woodworking is an enjoyable hobby and it can be profitable. Don't let a moment of carelessness ruin it for you. Before turning on any power tool think and make certain you know where both of your hands are. Take good care of yourself and others around you.

BISCUIT JOINER SAFETY

Because the blade is hidden from view except while cutting biscuit slots, the Biscuit Joiner may give a false sense of security. Remember that the small carbide-tipped blade in the Biscuit Joiner is razor sharp and just as capable as any other power saw to injure you if you get careless. All the rules described in this safety section apply fully to the Biscuit Joiner and should be adhered to at all times.

Disclaimer

Everything described in this book is based on my personal experience. I owned and operated a full-time woodworking business for over thirty years, first in Tampa, Florida and then in Austin, Texas. During most of those years I used Biscuit Joiners to build hundreds of projects for many customers and for myself and learned many ways to take full advantage of the capabilities of the Biscuit Joiner as a wood joinery tool.

This book attempts to convey as much of that knowledge as possible so you may experience the same benefits. Nevertheless, no guarantees are expressed or implied regarding your own results using the information in this book.

Every method described and pictured in this book and all the project books was actually performed many times on many projects. I personally designed, built, and photographed every project shown in the project books so I know these methods work.

I believe anyone, even with limited woodworking skills, can use a Biscuit Joiner to perform the work described, especially if they practice with the simple project plans included in the project books. Toward that end I have included detailed instructions, drawings, and photographs to clarify the methods. Nevertheless, it's impossible to know the skill level and capabilities of readers so I can't guarantee you will be able to successfully perform the tasks described herein.

In addition to the Biscuit Joiner, woodworking involves the use of an extensive collection of tools capable of inflicting serious injuries. I have made every effort to accurately describe my experiences with the Biscuit Joiner in detail, including safety considerations with it and other power tools, but I cannot be held liable for any damages or injuries resulting from the use of this information even if the user informs me prior to or after these damages or injuries occur.

This book includes the names of and information about several brand name products. Many of these are products I have personally used as indicated in the book and others have been highly recommended to me. I own no interest in any of the manufacturers or distributors of these products nor have I received any payment for listing them in this book. They are listed only as part of my experience and for informational purposes.

The user of this information agrees he or she is solely responsible for the consequences of using the Biscuit Joiner or any other tools or products described in this book. The information contained and distributed in this book is not intended as nor should it be considered professional, business, or legal advice.

For any questions please contact
awbenitez@hotmail.com .

For over twenty-five years Bill Benitez used biscuit joiners to build hundreds of cabinets and furniture pieces in Tampa, Florida and Austin, Texas.

During those years he used biscuit joinery for almost all of his residential and commercial projects. Biscuit joinery made his work easier, faster and more profitable and in this series of books he shares his experience.

Also in this series of books, learn all about the Biscuit Joiner and every step of using it on all your projects including:

About Biscuit Joiners and how to choose one for yourself.

Instructions with photos on how to use the Biscuit Joiner.

Complete project plans with instructions and detailed drawings.

Photos and descriptions of cabinets and furniture projects.

Drawings and descriptions of the joints you can make with the Biscuit Joiner.

A set of helpful Final Notes including valuable advice for making the best possible use of the Biscuit Joiner.