Valentine Project Tip 1.

St. Valentine was a martyr who was put to death on February 14, 270 AD for continuing to perform marriages, which was against Roman law under Claudius II. Since that time Valentine's Day has been a time for telling loved ones that you care not just romantic love of spouses but all love for family, friends and neighbors. The many gifts given on Valentine's Day like chocolates or jewelry etc. can be personalized by offering them in a handcrafted box.

The box calculator on our web site is particularly helpful to ensure the box you make is a suitable size to enclose your valentine gift. Once you have determined the inside measurements, use the box calculator to establish the pieces you need in the exact measurements to make your Valentine box. Try it!

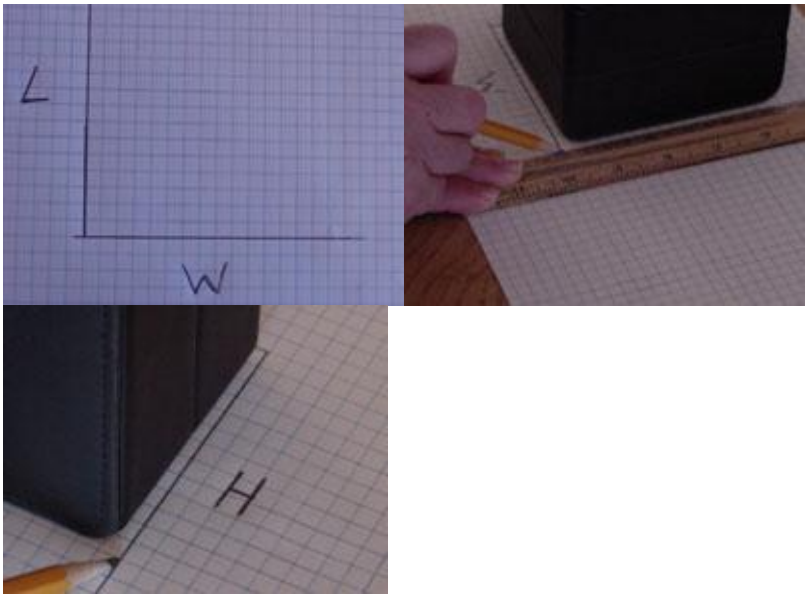
This year give a personalized Valentine!

Step 1: Deciding what to make?

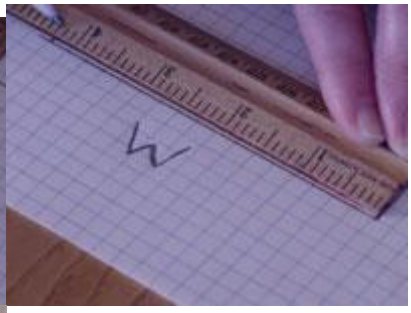
The hardest part is deciding what type of gift item is going to be wrapped in your custom handcrafted box. It is best to have the actual gift beside you when using the box calculator. If you prefer why not make the handcrafted box your unique Valentines gift. Here are some samples of products you can make a box to fit.

Step 2: Using the box calculator.

The following pictures show how to determine the inside size of the box you require. Lay the gift on squared paper and then measure to come up with the width, length and height for the inside size of the box.



Next we open the calculator and answer the questions on the calculator interface. Follow this link for the box calculator.



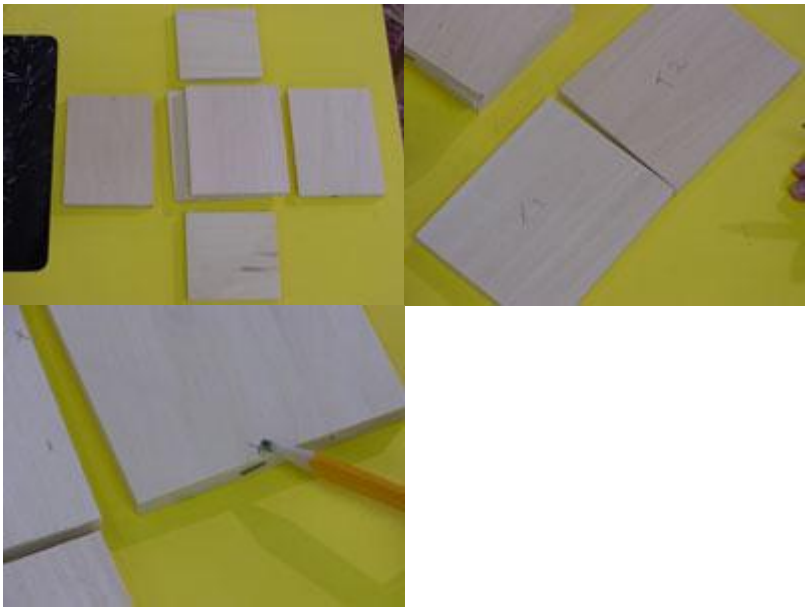
There are questions like: How many boxes are you building? What is the overall length of each of your boxes? What is the overall width of each of your boxes? What is the overall height of your boxes? What is the material thickness of your boxes? And the most important question when building a custom box for a specific product is: What type of dimensions are these? Are they inside or outside measurements?

Once we have answered all of the questions the next step is to push the calculate button and wait for the server to give the material list for your custom box. Link to Box calculator.

Step 3: Keeping the pieces straight.

Read and understand the cut list. You need to understand the width, length, and the thickness measurements of each of the pieces. To bypass sizing the material yourself for the custom made boxes, ask your local retailer to provide material sized to the calculator determined cut list.

Always Safety: You do not want to lose concentration when using the router. For safety identify all the pieces **AFTER** the sizing process and **BEFORE** the routing operations. Mark an X on all of the edges that need a rabbet joint. The top and bottom (or T and B) should be marked for rabbets on all four edges. If you are making many different size boxes at the same time, you need to identify each box. Use T1 for top of the first box and B1 for the bottom of the first box. The second box will have a T2 and B2 and so on.



Tools we use:

For the step-by-step instruction on how to process and assemble the Magic Boxes see the book, **Router Projects Volume 1,** as featured on the right side bar.

If you would like video support for this project see the book & video package which includes over 6 hours of video and fourteen project plans, in the Router Workshop Series 100 Book/Video set, as featured on the right side bar.

The router table that we use is the RS20091 Router Workshop table and floor stand which includes one sample of pre-cut pieces and the magic box plans. Check the right side bar for all products we use for this project.

Step 4: Tips on sizing.

After we have the material list the next step is to cut the pieces to size. Here are a few tips that experience has taught us over the years.

One: If we are using solid material, the first operation is ensuring that we have enough material at the correct thickness. First, rough cross cut the material into lengths, surface joint one face level, and edge joint the best edge. Next, plane the wood to thickness always keeping in mind that it is best to size all the material at once.

Two: Looking at the width dimension on the material list, choose the widest as the first pieces to cut. This technique establishes the correct direction of the grain in the solid wood. If we are using a MDF or particleboard for painted boxes it is not as important to keep the width of the piece going in a certain direction. Cut the largest pieces first, then move to the next largest and so on. This way if a mistake is made the larger piece can become one of the smaller pieces. If we have the reverse this will not work. For these kinds of problems the wood stove comes in handy for more than heat. Here's where the woodworker obliterates all evidence of a mistake and adds the cost of the extra material to experience.

Three: Once enough lineal feet of the width dimension has been ripped, cross cut pieces for the top and bottom to the correct length. When the cuts on the top and bottom pieces are complete we should mark a light pencil mark T for top and B for bottom on the best face side of each piece. We like to mark the face side because after assembly the marks help to determine which pieces have been sanded and which ones have not. Also could you imagine trying to sand off your marks on the inside of a small box.

Four: Here is where we recycle all of the left over material from the tops and bottoms by resetting the rip fence of the saw to the next smallest width. Remember we want to be sure to cut enough material on the one set up because multiple setups can cause mistakes that show up in the assembly process. Next is to crosscut the side parts and mark them front, back and ends with pencil on the face side. Optional tip: To make sure you will cut the rabbet joints in the right places, mark the ends of the front and back with an X. There are no rabbet cuts to be made on the ends.

Always Safety: Thinking & Planning Time First.

You do not want to lose concentration when using the router. For safety identify all the pieces **AFTER** the sizing process and **BEFORE** the routing operations. If making many different sizes at the same time, decide how to mark each piece. Use T1 for top of the first box and B1 for the bottom of the first box. The second box will be T2 and B2 and so on. Here is a great time to also mark an X on all of the edges that need a rabbet joint. On the T & B the X should be on all four

edges.

Valentine Project Tip 2.

In tip 1 you determined what gift (if any) will be enclosed in the personalized valentine box, how to calculate the box pieces and how to size and mark the box pieces. Tip 2 will explore router bit choices and the setups for the router cutting operations.

What is the rabbet joint?

A rabbet joint is a linear stepped notch in the side of a project piece. It is made either with the grain or across the grain of project pieces

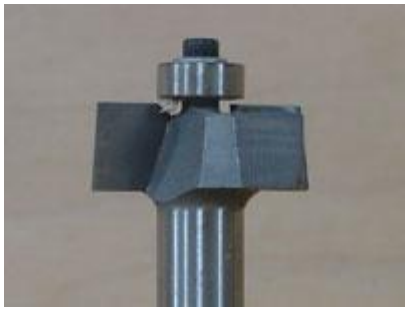
The most common uses of this wood joint are 1) sides to back panel for furniture 2) sub top support pieces and 3) fasten two pieces at 90 degrees as in the assembly of a box or drawer. This joint can be used in any place that requires a 90-degree corner.

Standard Dimensions

The standard dimensions of the rabbet joint are determined by two elements: A. depth of cut and B. width of cut. The depth is usually 1/2 the material thickness and the width of the linear notch has to be the full thickness of the receiving material.

Step 1: Choosing the right router bit for the rabbet joint.

There are many different types of router bits that will work to make the rabbet joint. You can use a rabbeting bit, a bottom-cleaning bit or a straight bit. The most important features of the router bit required to make the rabbet joint is a straight cutting flute that is designed to cut on both the side and the top. The strength of the joint requires the cutter to make a clean straight notch cut, which will affect the assembly and gluing process. The rabbeting bit and the bottom-cleaning bit both have these features.



Rabbeting Bit

Bottom-cleaning Bit

The side cutting edge makes the cut into the side of the material and the top cutting edge makes a clean cut at the base of the joint.

There are different types of straight bits but they are not the best bits of choice for a rabbet joint.The spiral bit as the name states has spiral side flute with the plunge cutting top. This cutter is designed to plunge holes and make square mortises. The straight bit in most cases has a straight cutting edge with no cutting edges on the top. It is designed to cut on the side only making open-ended grooves and dados the cuts of choice.

The rabbeting bit, as the name indicates, is designed to cut rabbets. The features of the rabbeting bit are as follows: A. It has a shallow flute length. B. It has a large diameter. C. The top edge of the cutter has been sharpened and is designed to cut.

Additional features on some rabbeting bits are the 1/2" diameter shanks, and bits with a sheer angle. The sheer angles increase the cutter's performance.

When choosing the bit for our rabbet joint, we need know the thickness of material being used. A good rule when determining the width of the bit to be used is "the router bit must be at least twice as wide as the thickness of the material". If we are cutting a 3/8" rabbet joint we need to use a bit that is at least 3/4" wide, makes a straight cut, and will cut clean on the top of the notch.

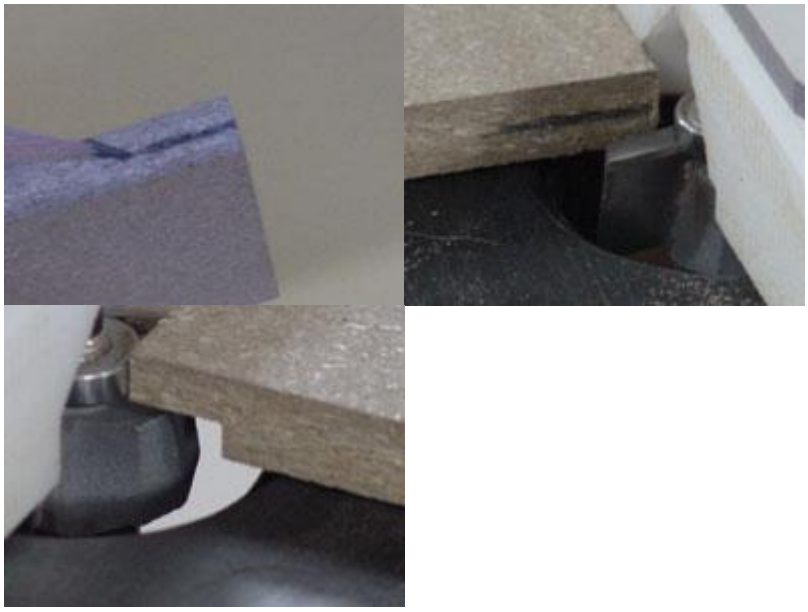
Step 2: Setting the width of cut.

Step 3: Setting the depth of cut.

Note: In the calculator-generated material list you received, the calculations for the depth of the rabbet cuts are based upon 1/2 of the material thickness. Reasons to set the depth of cut at 1/2 of the material thickness are: A. maintain the side material strength, B. give the joinery the required gluing surface and C. simplify the process of calculating the material.

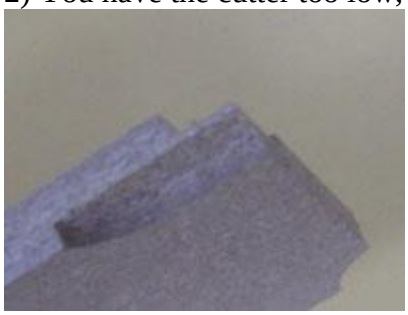
Here is a simple way to set the proper depth of cut to 1/2 of the material thickness.

- Mark the piece roughly to the center.
- Set the depth of your cutter to the mark.
- Start the router and cut the corner of the sample material.

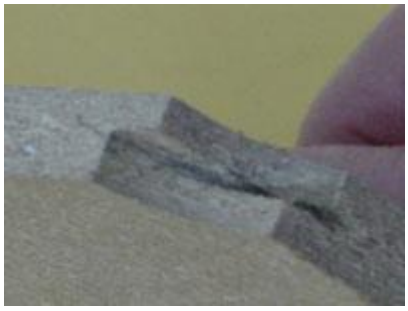


- To check the rabbet cut, flip the piece over and make another test cut in the same corner. Three things can happen depending on the height of the router bit.
1) You can be right on the center and the two cuts will meet.

2) You have the cutter too low, there will be material exposed on the intersection.



3) You have the cutter too high and there will be no material exposed but the cuts will overlap. Adjust the bit height if necessary.



Step 4: Make the rabbet cut.

To test the setup, use sample pieces to make the rabbet joint. ALWAYS feed the material into the cutter. Dry fit to see how it turned out!

Bonus: Heart Inlays.

Here is a great place to add our December tip on inlays. Put a heart inlay in the top of your Valentine box before you assemble the project.

Tools We Use

For the step-by-step instructions on how to process and assemble the Magic Boxes see our book, Router Projects Volume 1. For video support see "the Router Workshop Series 100 book and four video package", which includes over 6 hours of video and 14 project plans. The router table and floor stand we use is the RS20091, which includes one sample of pre-cut box pieces and the plans for the magic box project. Rabbeting bit 3/8" (available in 1/4" or 1/2" shank) Bottom Cleaning bit 3/4" (available in 1/4" or 1/2" shank)

Next week: Valentine Project Tip 3.

The Router Workshop E-news will have tips on making a base for your project and choosing the right bits to add the finishing touches to your unique Valentine box. Coming to your desk top SOON.

Valentine Project Tip 3

Router Table & Floor Stand

The tips for the valentine project, a personalized box sized to enclose a gift for Valentine Day, are complete with this the third tip. Make a base to fit your box and choose the right bits for the finishing touches. Use a V groove bit for lid/box intersection and your choice of profile for the base. Also in this tip we introduce, Lu's "Finish It" section. Wood projects are not finished until a final paint or stain and varnish coating has been chosen and applied on the newly crafted project. For suggestions and tips on finishing, check Lu's "Finish It" .

Moulding the top of the box.

Choosing the right router bit. Three dimensions are important when choosing the right router bit to mold the edge. 1) the size of the pilot bearing, 2) the overall diameter dimension, and 3) the height of the cutting edge.

Before we can pick the right router bit to use to mold the top of the box we must consider the following: 1) What is the thickness of the box top? 2) Does the chosen bit look good on the box?

Product # 13-112
Round Over Bit

So why is it important to know the top thickness before choosing the router bit to mold the edges? If the thickness of the box top is 3/8” then the depth of the router bit must shape and mold the edge of the box within that dimension and leave material below the mold. If the thickness is more than 3/8” then we will have the molding bit cutting a hole through the top of the box.

The criteria to choose suitable router bits that do not exceed the top thickness is determined by the height of the cutting edge. Example: the round over router bit will work well on the box but if we use a 1/2” radius round over bit we are going to exceed the thickness of the top. We need to work within the perimeters of the box thickness. We need to use the 1/16” radius, 1/8” radius or the ¼” radius round over router bits. Measuring the height of the cutting edge is the best way to not exceed the top thickness.

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Product # 31-332
V Groove Bit

Product # 12-312
Cove Bit

Product # 15-113
Roman Ogee Bit

V Groove cut on lid/box

Once the lid is molded and the box has been cut apart, to finish the lid/box joint install a V groove bit in the table-mounted router. Position the table fence so the point of the bit is centered on the joint where the lid meets the box and set the depth of cut to make a shallow (1/16”) V.

Product # 13-216
Round Over Bit

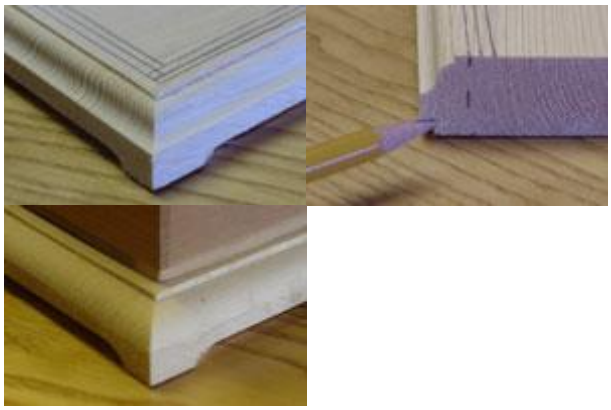
Put masking tape across the joint on two ends while cutting the two sides to hold the lid and box together. Change the tape to the two ends to cut the V groove in the sides.

This cleans the edges of the cut and gives a finished look.

The Base

The calculator does not make the base calculations because different router bits will need different amounts of material to make the base look good and not every box needs a base. The first step in making the choice to put a base on the project is to choose the router bits. You can use common bits like the cove bit, round over bit, and the roman ogee bit. On the base we don't worry about the thickness of material but must worry about the look of the base. Here is where cuts of the router profile on the edge and end of a sample piece will help you to pick the right bit for your project. Cut samples on test pieces of the material to determine which profile looks best. Your samples will also help you choose the right space between the base of the box and the cutter profile.

Once the bit has been chosen the next step is to determine the length and width of the base. We need to consider the space between the box and profile edge and the amount of room needed for the router profile. In the beginning the best way to do this is to cut samples and measure them.



Another consideration is to compare the size of the box to the size of the base. A large box may need a stacked base. Use the sample blocks to identify the best router bit profile to stack together. See Photos

As time goes on you can determine the cutter profile by simply taking the pilot diameter away from the overall diameter and divide the result in half. You then add two of the space measurements to the length and width of your box to arrive at the base size. See example below.

Example: Our sample router bit has a ½" bearing with an overall diameter of 1 ¼" and the space between the box and profile edge is 1/8". We have 1 ¼" – ½" = ¾" divided by 2 = 3/8". The material required to cut the profile of this router bit is 3/8". We now have to add the 3/8" of the profile cutter to the required 1/8" space which equals ½". The results show that we need a ½" of extra material all around our box to make the base. So to determine the size of the base we add 2 X ½" measurements or 1" to the length and width of the box we have made. If the length and width of the box is 6" square then the base will have to be 7" square. You may wish to make the box without a base. This is an acceptable alternative.

Luther E. Judt's Finishing Corner

Luther Judt is a woodworker but more than that he is a professional finisher.

A major component of the woodworking project is the choice and application of the finish. Often finishing is considered an operation that anyone can do with no prior knowledge or practise.

As his students and advocates can attest, Luther has much to teach in the preparation, application, and final processes associated with professional finishing.

Helpful hints from Luther's Finishing Corner is now available to you online!

F-1 Before Gluing

Always put the project together dry (dry fit) before applying any glue. If things do not fit properly, they will not glue properly.

F-2. Gluing

Never remove excess glue with a wet cloth unless you are applying a paint finish. For stains or clear finishes, allow the glue to become rubbery and then carefully remove it with a sharp chisel or scrapper. After the glue has completely hardened you can use a damp cloth to wipe the joints as this causes the remaining glue blotches to show up. The blotches can then be removed by scraping.

F-3. Sanding

Too many beautiful pieces of furniture lack the professional look because the edges have not been properly sanded. Routed edges look good after they have been shaped, but if they have not been sanded properly, they turn ugly when stained. Sand, sand, sand and then sand again. Begin with coarse grit paper and progress to fine grit paper for a professional result. Good quality abrasives may cost more, but you will be a happier person when you apply the finish.

F-4. Ready to finish

When you have glued and sanded your project, it is ready for a finish and you do not have a finishing room. A recommendation to acquire the dust free space for finishing that I employ is: 1) Clean the shop. 2) Rest for a few days to allow the dust to settle. 3) Clean up the project again and then start your finishing procedure.
Note: Do not use the shop for woodworking during the finishing procedure. The other alternative is to have a dust free room used just for finishing.