ROUTERSHOP
by HAWK Woodworking Tools™

Operator's Information

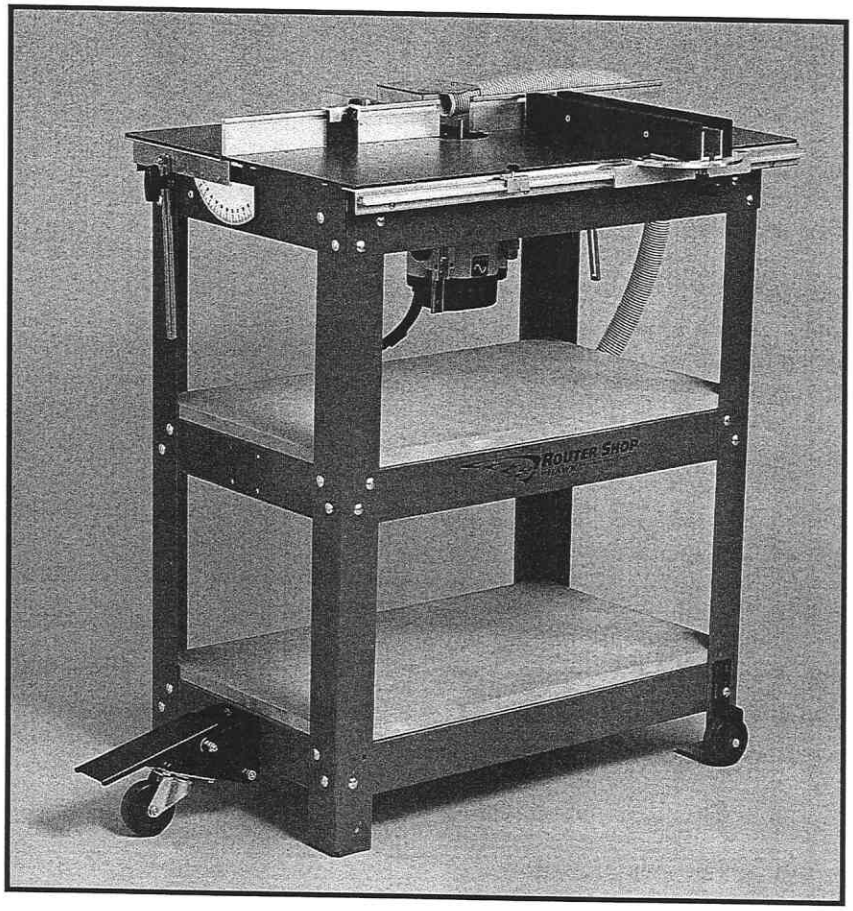


Table of Contents:

Detailed 'How-To' Procedures:

General Safety Information

Know Your Power Tool.
Read and understand the owner's manual and labels affixed to the tool. Learn its application and limitations as well as the specific potential hazards peculiar to this tool.

Ground All Tools.

Keep Fence in Place and in proper adjustment.

Remove Wrenches. Form a habit of checking to see that wrenches are removed from the tool before turning it on.

Keep Work Area Clean.
Cluttered areas and benches invite accidents. Floors must not be slippery due to wax or sawdust

Avoid Dangerous Environment.
Don't use power tools in damp or wet locations or expose them to rain. Keep work area well lighted. Provide adequate surrounding work space.

Attach Tool Securely to Bench or Stand.

Keep Children Away.
All visitors should be kept a safe distance from work area.

Don't Force Tool.
Allow cutter to reach full speed before moving workpiece into cutter. It will do the job better and safer at the rate for which it was designed.

Use The Correct Tool.

Don't force tool to do a job it was not intended for.

Use Safety Goggles.
Wear goggles (must comply with ANSI Z87. 1) at all times. Also, use face or dust mask if cutting operation is dusty, and ear protectors during extended periods of operation.

Use Push Blocks When Necessary. Do not attempt to do "freehand" work on small workpieces.

Avoid Awkward positions.

Maintain Tools with Care.

Keep tools sharp and clean for best and safest performance. A dull, gummy, or improperly sharpened cutting tool can cause material to stick jam, stall the tool, or kickback at the operator. Keep worktable free of accumulated sawdust Follow instructions for adjusting or changing cutter.

Turn power switch to Off position when tool is not in use.

Avoid accidental starting.

Make sure switch is "OFF" anytime tool is not in use.

Check for damaged parts.
Before using tool, check for alignment of moving parts, binding of moving parts, breakage of parts, and any other conditions that may affect its operation.

Never leave power on when tool is unattended.

Use only cutting tools and accessories designed for this tool.

WARNING: Do not allow familiarity (gained from frequent use of your tool) to become commonplace. Always remember that a careless fraction of a second is sufficient to inflict serious injury.

Think Safety.
Safety is a combination of operator common sense and alertness at all times when tool is being used.

Note: Safety devices may have been left out in some pictures for the reason of visual clarity.

Getting the Most Out Of Your RouterShop™

Choosing the right router:

While most routers can be used with the RouterShop, we have some recommendations regarding the router that you select, so that you will get the most benefit and enjoyment out of the RouterShop's use.

Horsepower Rating.

For most users, a router in the 1 1/2 hp range is adequate. For constant use, or extensive use doing "heavy" cuts, a larger HP rating may be considered.

Base Size and Mounting

The S-19 will accept most routers having a 7 3/4" or smaller base. However the base thickness (not including the removable plastic base plate) cannot exceed 1/2" The S-29 will accept virtually any router having a 7-3/4" or smaller base.

Depth Adjustments

Select a router having an easy to use depth adjustment. Also, choose one which has a means of easily adjusting the "O" position. This feature is helpful for giving you the repeatability that the RouterShop provides.

Collet Size and Extension

Select a router that will extend the collet even with, or beyond, the base. Additionally, you should select a router with collets for using both 1/4 and 1/2 inch router bits.

Plunge Routers

Plunge routers work much better in the inverted position if the springs are removed. If you plan 'n use a plunge router select one that has an easy to use depth adjustment, and is easy to change router bits, when it is table mounted.

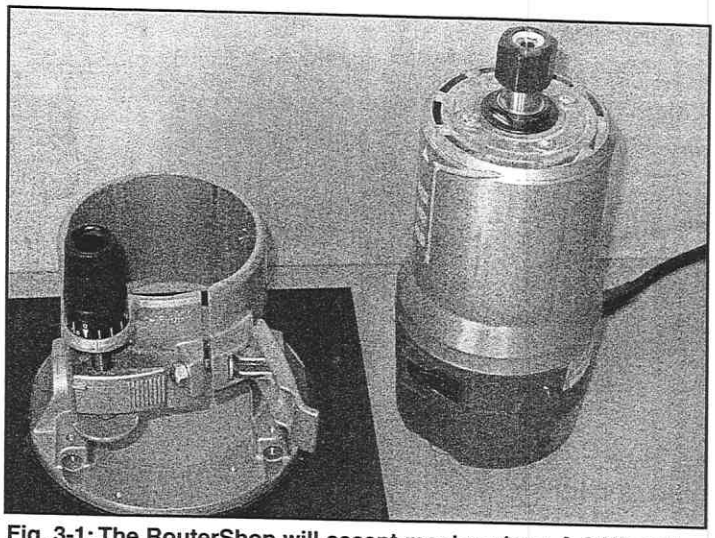


Fig. 3-1: The RouterShop will accept most routers. A 2 HP unit is adequate for most users.

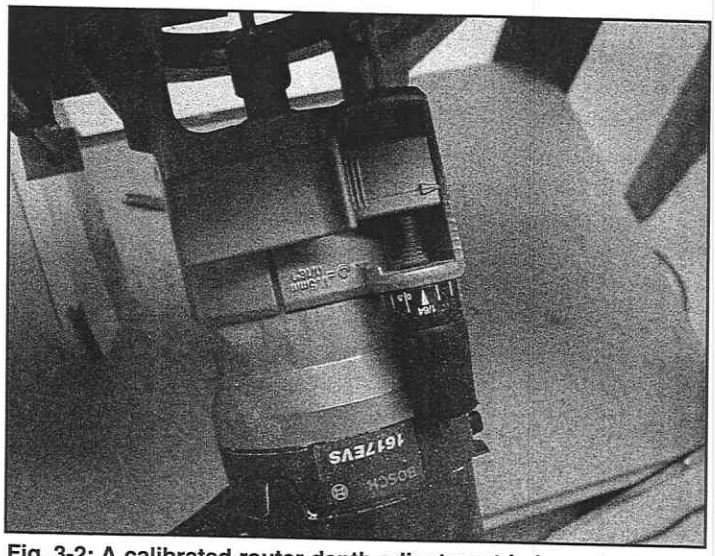


Fig. 3-2: A calibrated router depth adjustment is important to RouterShop use. Above are two popular types.

If a plunge router is used, select one with easy to use depth adjustment.

Router Bits.

Depending upon your intended use of the table, there are some bits that you may find useful when using your RouterShop: long straight bits (one or two sizes), one or more dovetail bits, long round nose bits (3/4" for European hanger pulls), a vertical raised panel bit, and some large profile molding bits. You will be amazed at the number of different and distinctive profiles that you can create with these bits and your RouterShop.

Power Switch.

Rather than turning your router on and off with its switch, we recommend that you use a standard "power strip." In most cases, a separate vacuum can also be plugged into the power strip allowing the strip's switch to turn on and off both the router and the vacuum as required.

Select a power-strip with an adequate amperage rating.

Mounting Your RouterShop to a Bench.

When the router table is being used in a tilted position with the cutter positioned below the workpiece, the sawdust is ejected below the table. We recommend that some provision be made so the sawdust does not accumulate under the table. Have an open area under the table, or a means of dust collection under the table.

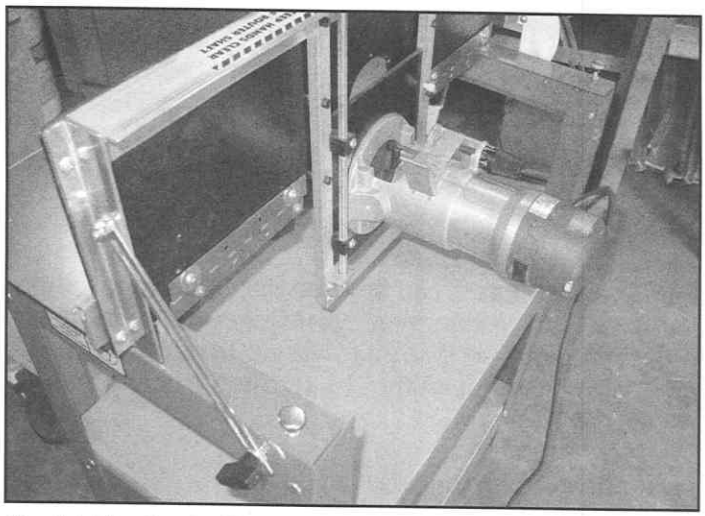


Fig. 4-1: The RouterShop in the 90° positions allows fixed base routers to be removed easily for quick and safe bit changing.

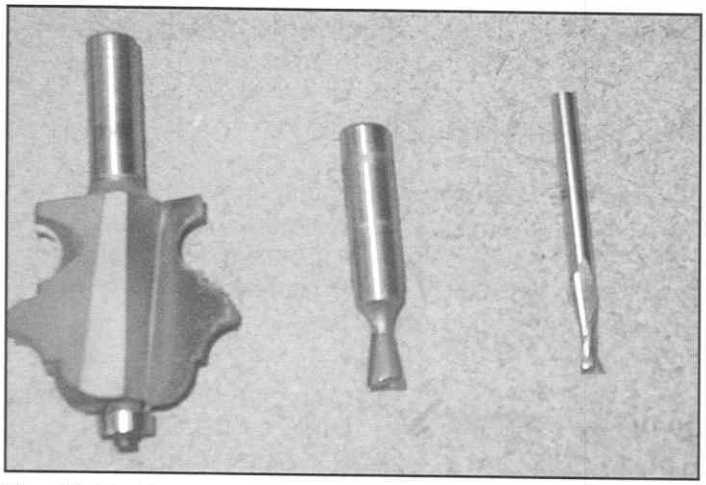


Fig. 4-2: The RouterShop allows just a few bits to create many joints and profiles.

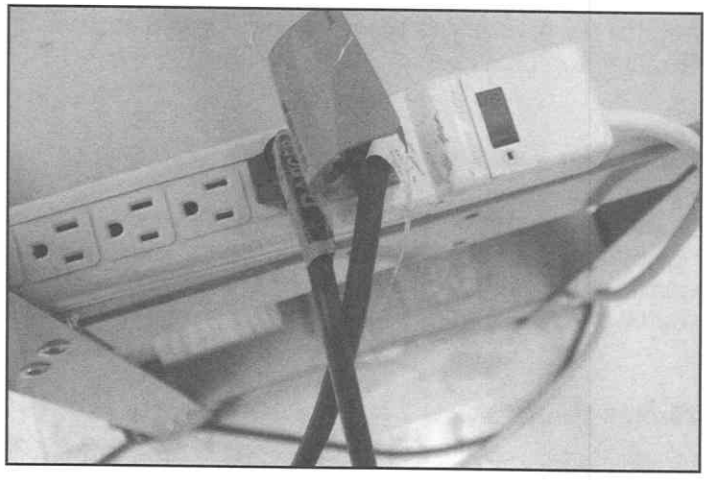


Fig. 4-3: By using a switched power strip, a shop vacuum can be started at the same time as the router. This convenient power strip also allows the router to be quickly disconnected for bit changing.

Introduction to Your RouterShop™

Crossfeed

Your RouterShop is equipped with a calibrated crossfeed. The crossfeed is actuated by turning the handle at the rear of the tilting table. Each revolution of the handle feeds the router exactly 1/16th of an inch. The crossfeed also has a numerically calibrated scale to reference the crossfeed position. An optional accessory kit allows you to place a linear scale on the backside of the table.

Do not extend the crossfeed forward past the end of the scale.

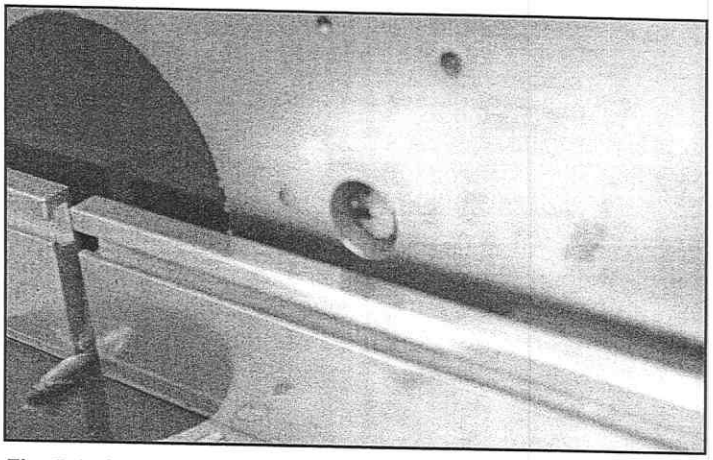


Fig: 5-1: Crossfeed is an important, repeatable measurement. One turn of the crossfeed handle moves bit exactly 1/16th". Handle position allows even smaller measurements, i.e. 1/2 turn equals 1/32". Crossfeed window gives very accurate readout.

Tilting Table

The tilting table is secured at any position by tightening the two strut knobs located at the right and left sides of the top rear of the base.

When changing the angle of the Tilting Table, hold the biting table firmly and then loosen one knob and then the other. Move the table to the desired angle and retighten both knobs. **Do not let the table fall.**

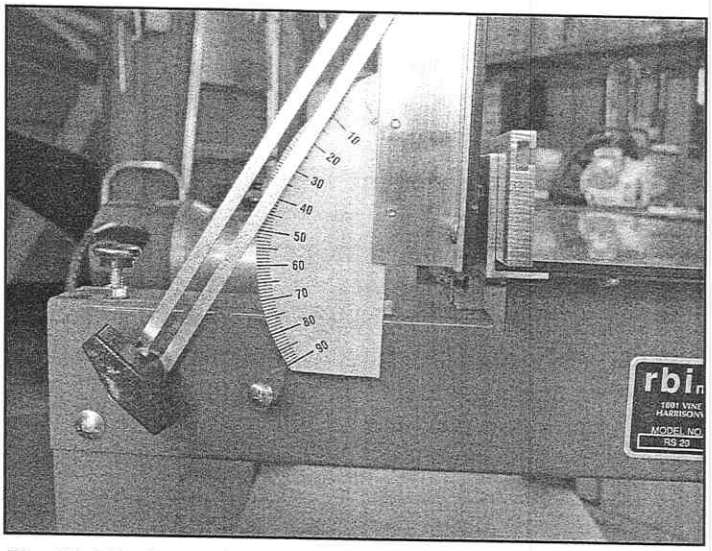


Fig. 5-2: The RouterShop's tilting table allows table angle from 0° to 90° and can be accurately set by using tilt angle indicator.

If table is operated for an extended period tilted upward, remove sawdust from the hinge area before lowering the table.

Do not tilt the table upward,when the crossfeed is extended forward with a router bit extended above the worktable surface. The bit may contact the worktable and cause damage to the table and the bit

Lower the router and/or extract crossfeed before tilting the table.

Fence

The fence is made up of two sections and each section is adjustable to fit router bits of various widths. To adjust the fences, slightly loosen the screws and equally adjust the fences to the desired opening. Tighten the screws while holding the fences forward against the worktable edge. The opening should only be as large as necessary to provide approximately 1/8" clearance on each side of the bit

Fig. 6-1: The fence is in two sections. Each can be adjusted from left to right so that clearance to bit is about -1/8".

Offsetting Fence

Fences may be offset by moving the infeed side of the fence slightly rearward. See "RouterShop as a Jointer" for details.

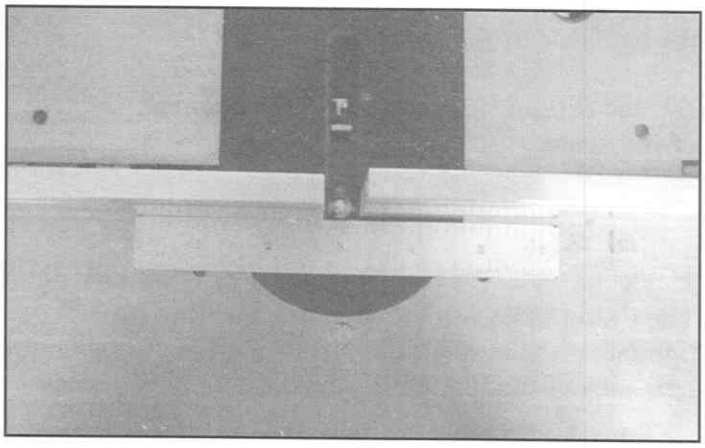


Fig. 6-2: The fences can also be adjusted front-to-back. For normal operations, both fences should be full forward. For joining boards, the infeed side fence (right) is adjusted—see Using Your RouterShop as a Joiner Page 34.

Combination Guard and Dust Collector

The combination guard and dust collector is mounted by means of a sliding device which keeps it positioned properly when the table is tilted at any angle. The Clear Lexan bit guard panel on top of the collection chamber may be pivoted to the desired position. A hose is provided to connect to the dust collection chamber and to your vacuum or dust collector.

Operating Your RouterShop™

Operator's Manual

Read the operator's manual of the router that you have selected to install on your RouterShop, and become familiar with that tool.

Installing the Router Bit

Follow the instructions of the router manufacturer. Unlike standard router tables, the RouterShop allows you to change router bits easily when using a fixed based router. By raising the tilting table to 90°, the router motor can easily be removed from the base, and the bit can be comfortable and safely changed with the router on a bench. The router should be unplugged any time the bit is adjusted or changed.

Due to the tilting feature and the space required by the crossfeed, sometimes you will want to position the bit in the collet extended outward -s much as possible (i.e., not totally seated in the collet. Most bit manufacturers recommend that at least 5/8" of the bit's shaft be within the collet.) Be sure to read the router's instruction manual for safe use of this machine.

Table and Router Settings

As we proceed into the operational procedures, we will be referring to three different settings:

D - Depth .... The depth setting on your router — *ex. 1/4".*

C - Crossfeed .... The reading on the crossfeed scale and the crank handle position (12 o'clock, 4 o'clock, etc.) — *ex. 20 on the scale and the handle at the 6 o'clock position.*

A - Angle .... The tilt angle of the table as read on the protractor — ex. 0°.

Recording of these three settings, after you have used the same "zero" starting point, and the shape/style of the router bit and you can duplicate any shape quickly and accurately at any future time.

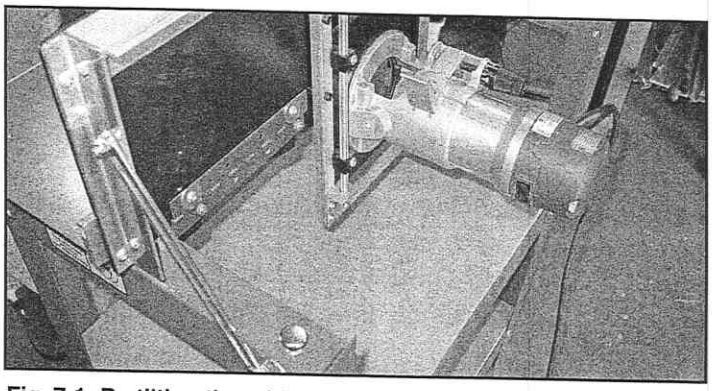


Fig. 7-1: By tilting the table to 90°, the router can quickly be removed for safe and easy bit changing. Always unplug the router when changing bits.

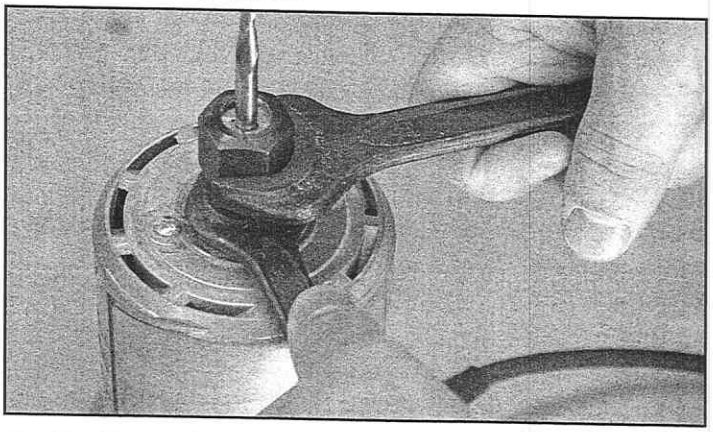


Fig. 7-2: Be sure to follow the router manufacturer's recommendation about installing bits.

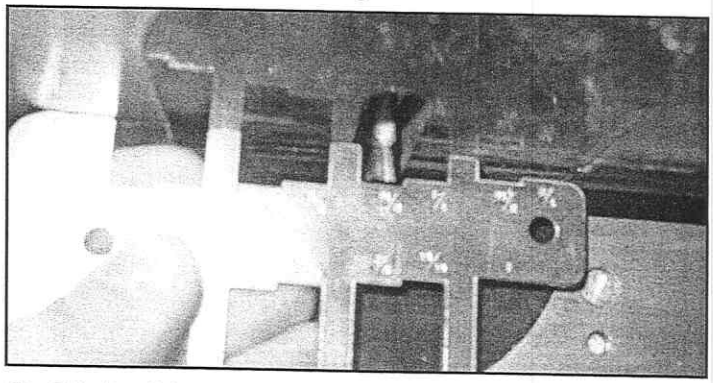


Fig. 7-3: Depth is set at the router. The router is first "zeroed" (see Page 10) and then adjusted to the required depth. At right, table angle is indicated.

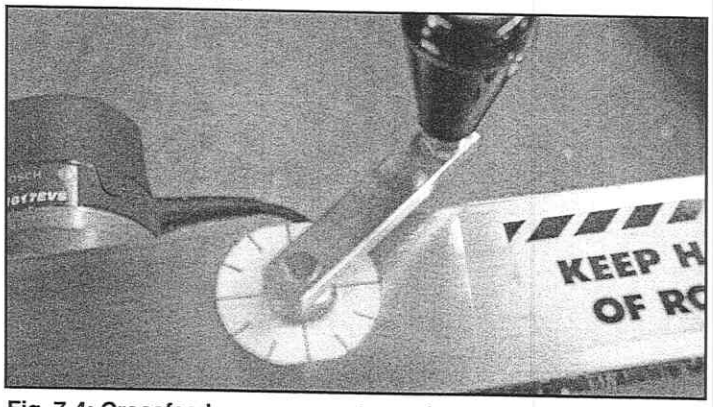


Fig. 7-4: Crossfeed measurement consists of both the crossfeed reading per the scale and the crank handle position.

Using Your RouterShop In the Flat Position (0°)

This differs only slightly from a regular router table, in that the fence is not adjustable fore and .aft. With the RouterShop, the fore and aft adjustments are accomplished accurately with the use of crossfeed.

To set the table up for use in the flat position, adjust the tilting table to the 0° tilt angle, and tighten both strut knobs.

With bit installed, extend the crossfeed so the bit is forward of the fence. Adjust router depth adjustment upward so the top of the cutting edge contacts your workpiece. This is the "O" setting for Depth. Then raise the bit to the desired height using the router's bit depth adjustment mechanism.

Retract crossfeed, then extend it forward until the front edge of the cutting edge of the bit just contacts the workpiece. Make a note of the crossfeed reference number and~the handle position at this setting ex.—24 at 12 o'clock.

extend crossfeed forward to the desired setting (one complete turn of the handle equals 1/16". Turning the handle a half a turn (ex. 12 o'clock to 6 o'clock) would equal 1/32".

Depending upon the profile that you are doing, multiple passes will be accomplished either by raising the depth adjustment on the router or by extending the crossfeed forward.

If this is a profile that you may want to duplicate in the future, you may do so by saving or tracing a sample of the finished profile and recording the bit used and the settings of the finish pass on the sample. (Example: 1/2"Straightbit; D = 1/2"; C = 29 at 3 o'clock and A = 0°).

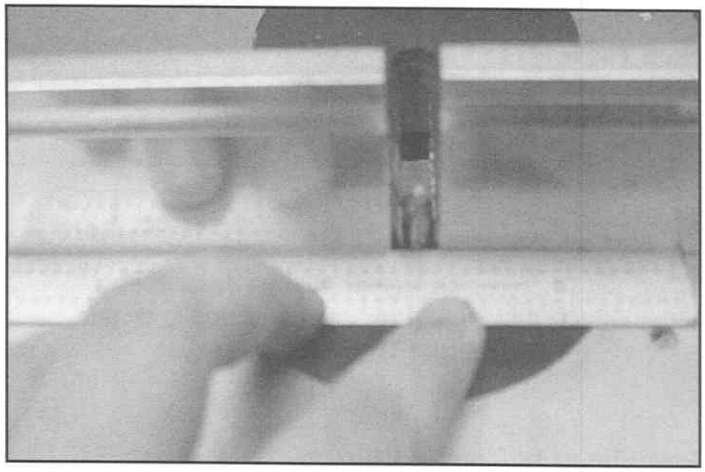


Fig. 8-1: Crossfeed is "zeroed" by moving bit until it comes in plane with fence and noting crossfeed scale readout and handle position.

Record all settings of shapes that are to be replicated in future.

Beveling Edges with Your RouterShop.

Set up the table as you would for 0° setting. Adjust the table to the degree of bevel desired. Retract the crossfeed. Make several passes, extending the crossfeed between passes, until the bevel is entirely across the edge of the ~workpiece. Record the crossfeed settings for future reference. ~

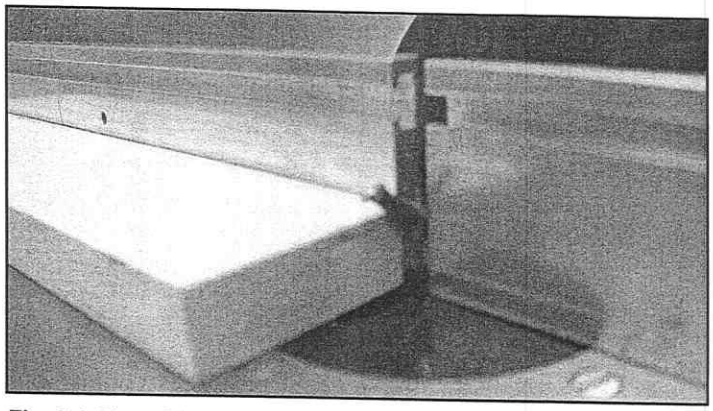


Fig. 9-1. The table set at other angles can allow boards to be given a chamfer (inset top) or beveled edge (inset bottom.)

Using Your RouterShop in the 90° position.

The router bit will often be below the workpiece when the router table is in the 90° position.

Tilt the table to the 90° degree position and tighten both strut knobs.

Raise the cutter, by turning the crossfeed crank knob to the desired setting for your first pass. Each full turn of the handle represents a 1/16th" rise.

Remember to feed workpiece from left to right when the cutter is below the workpiece. Do not allow sawdust to ~accumulate under the table.

Adjust the crossfeed upward (clockwise) between multiple passes.

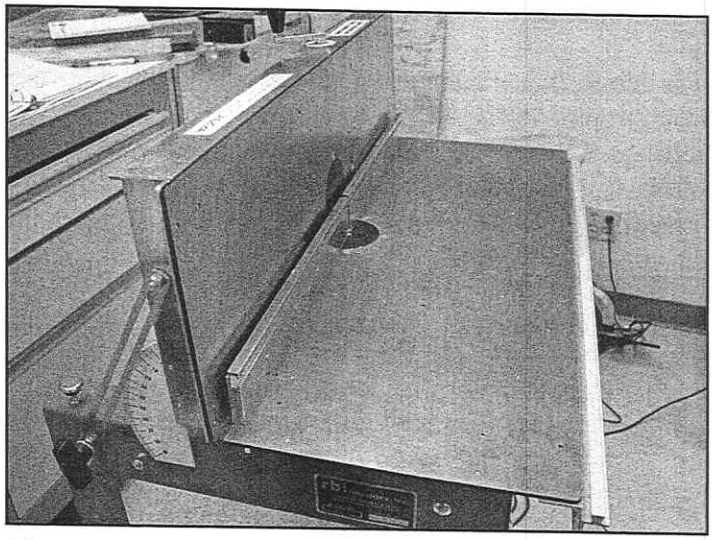


Fig. 9-2: The table set at 90° has many, great uses. Some of these are illustrated on the following pages

If this is a profile that you may want to duplicate in the future, save a sample of the workpiece and record the bit used and the settings of the final pass.

Example: vertical raised panel ogee bit; D = 1 9/16"; C = 44 at 6 O'clock A = 90°

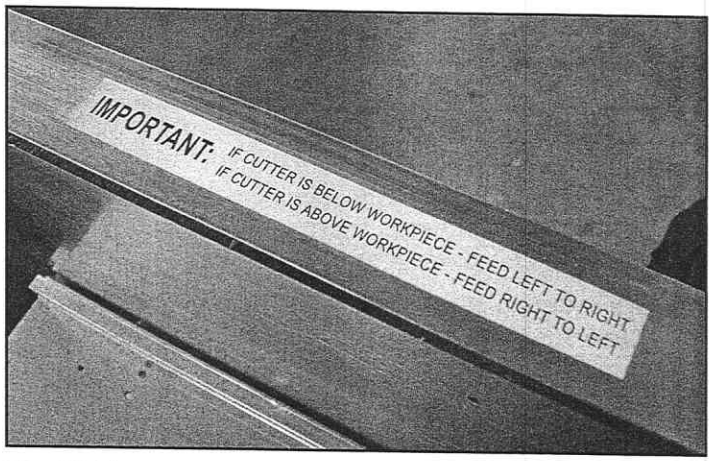


Fig. 9-3: The workpiece should be fed from left-to-right when the cutter is below the workpiece. A label on the top edge of the table serves as a reminder (inset).

Using the RouterShop in the 90° Position (Router Horizontal)

The RouterShop set up in this manner enables you to accomplish many operations that would be difFicult, impossible or unsafe with conventional router tables. Some such tasks are:

Raised panels using vertical raised panel bit
Large Profile Mouldings
Rabbets
Mortise and tenons

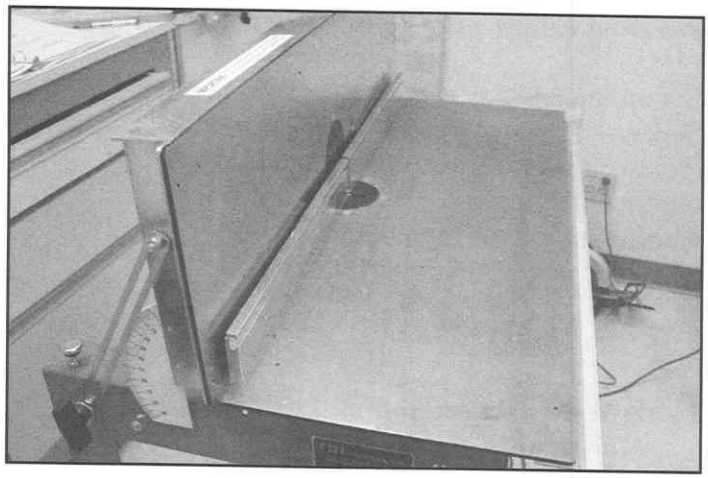


Fig. 10-1: The 90° position provides you with many uses not normally available in standard router tables.

Zeroing Router Depth and Crossfeed

The RouterShop's accuracy and repeatability are due in large part to the ability to record these two settings. In order to make the same cuts at a later setup, it is necessary to adjust router depth and crossfeed settings. Here's how.

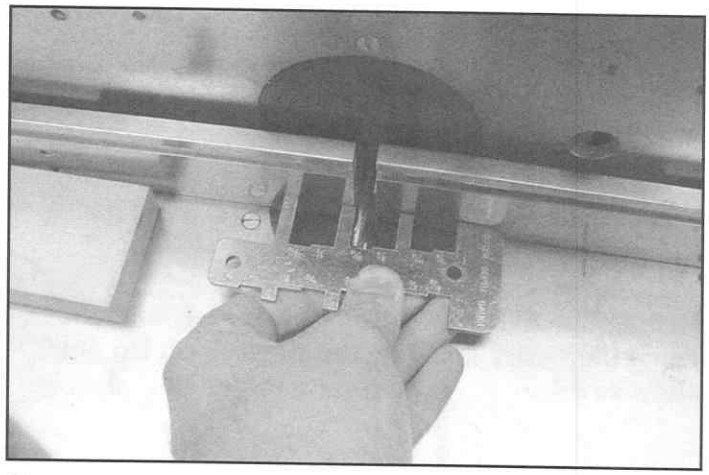


Fig. 10-2: Adjust router depth to zero by adjusting depth until bit just comes in contact with plane of fences. The depth scale can then be set to zero.

Zeroing Router Bit Depth:

Adjust router depth adjustment forward (table in 90° position until the tip of the bit just contacts the workpiece with the workpiece located against the fence. This is the "O" setting. Now adjust the router's depth readout to "O". With this done, the router depth can be accurately set

Zeroing Crossfeed:

With the table in the 90° position, raise or lower the crossfeed so that the top cutting edge of the router bit is just in contact with the workpiece. This is the zero position. Note the reading in the crossfeed window and the "clock" position on the crossfeed handle. These settings make up the "O" crossfeed setting. *Ex: 24 at 12 o'clock*

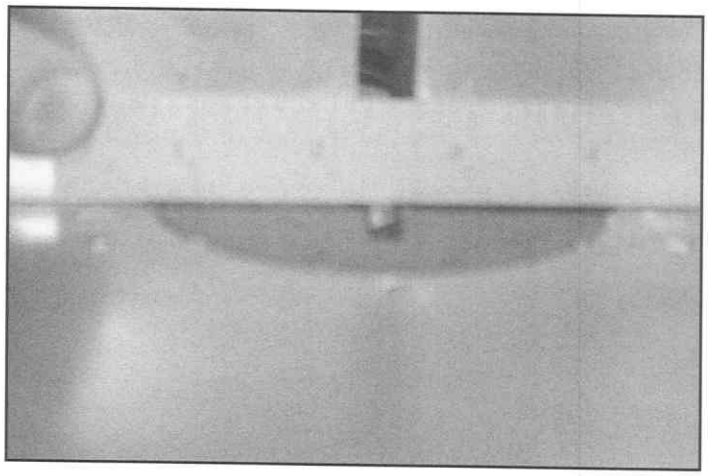


Fig. 10-3: To zero crossfeed, the bit is adjusted so that the top edge is just in contact with workpiece. The "zero setting" is recorded as the scale reading and crossfeed handle position.

Using the RouterShop™ "Quick Notes"

What RouterShop users like most about the RouterShop is its ability to give repeatable angles, depth of cuts, and crossfeed position. This means making duplicate profiles or specialty cuts exactly the same as the first simply by resetting zero positions and then resetting to recordings that were made before.

The RouterShop Quick Notes are simply forms that will help you make any joint exactly as you did before. It allows you to conveniently record all the essential information.

There is one form for each of the joints that are described in this booklet and several blank forms. Do not write on these forms. Instead, use these forms as masters and copy them for making your shop notes.

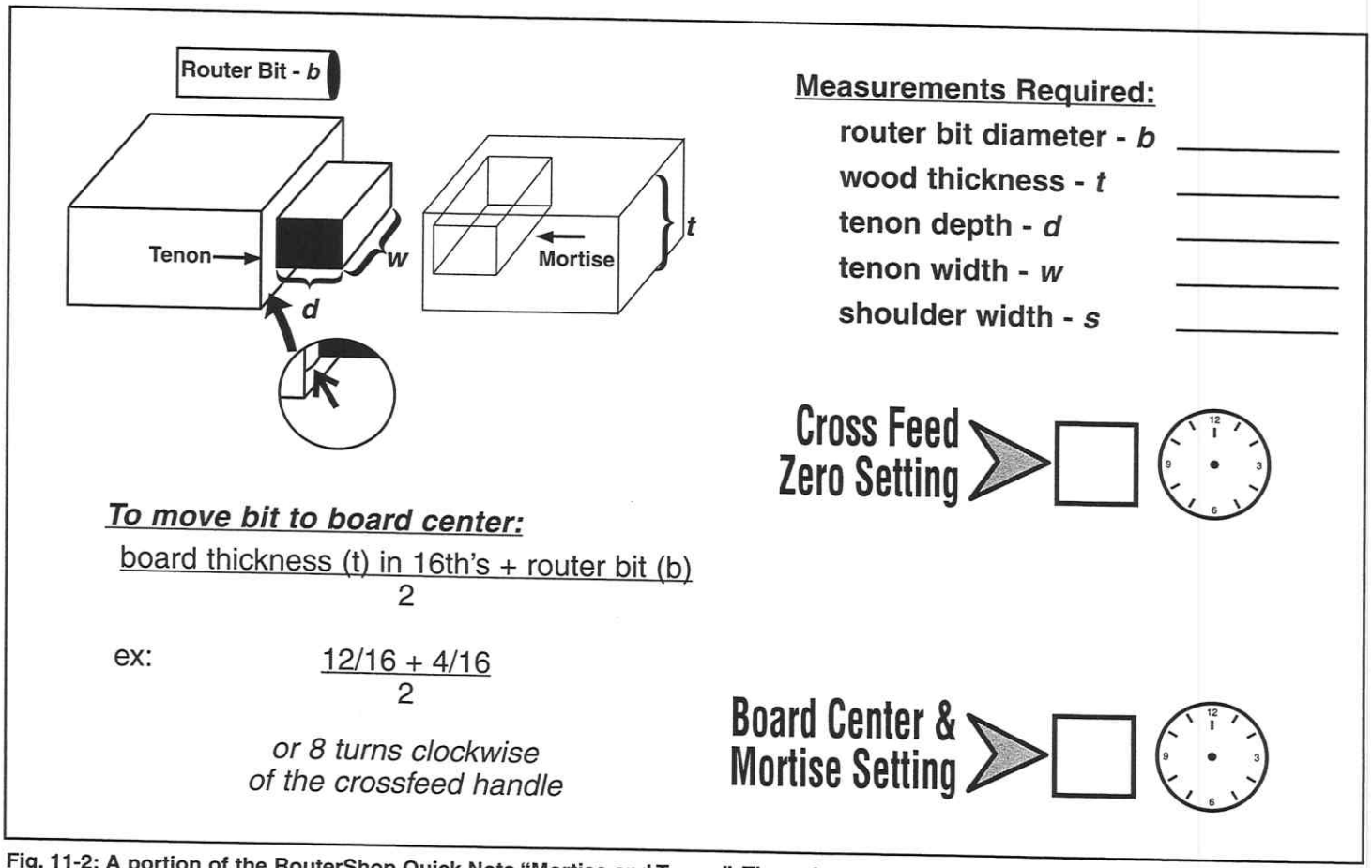
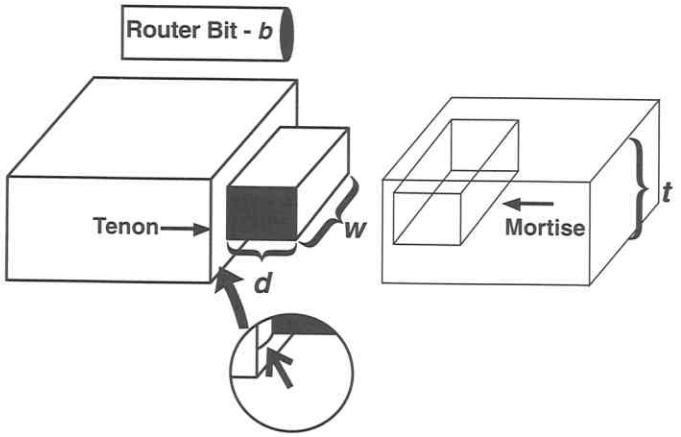


Fig. 11-2: A portion of the RouterShop Quick Note "Mortise and Tenon." These forms are designed to be copied so that specific information can be noted easily.

Mortise and Tenon Joints



Measurements Required:

router bit diameter - b
wood thickness - t
tenon depth - d
tenon width- w
tenon thickness - h
shoulder width - s

The repeatability of the RouterShop allows for very fine joinery. We will use the Mortise and Tenon joint to serve as a fully illustrated example. And it's easy to do. Just follow the step-by-step instructions — and remember to use the "RouterShop Quick Notes" forms to notate your settings. It will make all future joints quicker to do with much less chance of error and waste.

CAUTION: Be sure to use holddowns, push sticks and/or other safety items in making all cuts. Always wear proper eye and ear protection.

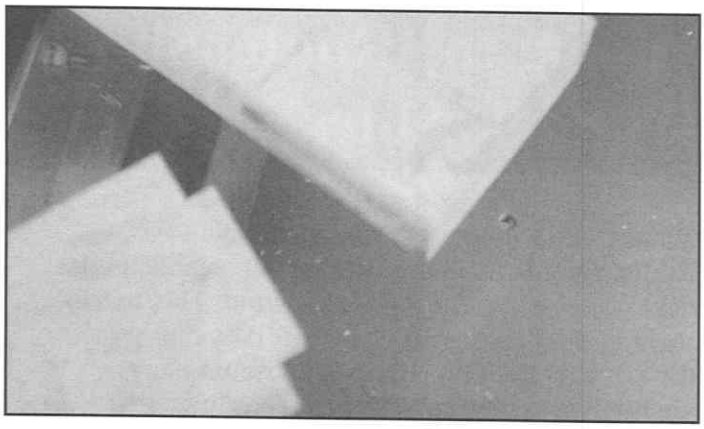


Fig 12-1. Mortise and tenon joint made with RouterShop.

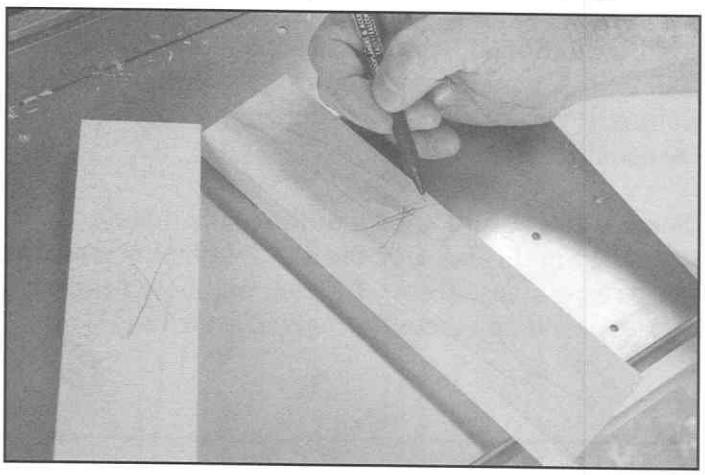


Fig 12-2. Layout joints on bottom of workpieces.

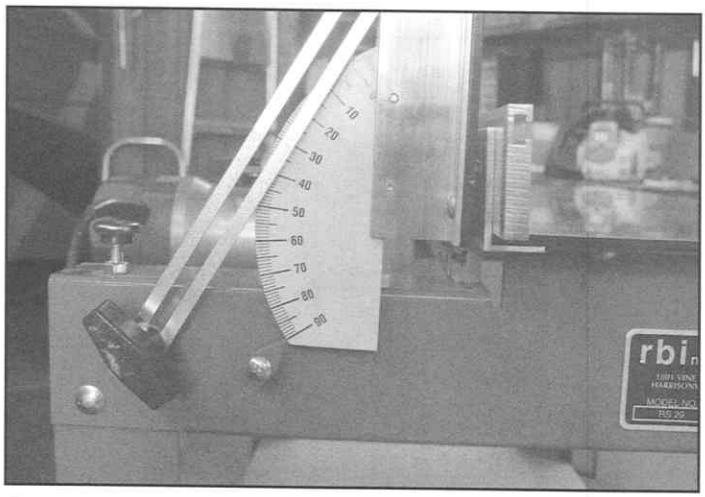


Fig. 12-3. Set table tilt angle to 90˚.

Instructions - Making the Tenon:

1. **Layout** where the mortises and tenons should be located. Use pencil marks on the back side of each joint. Keep good side face down. While the RouterShop allows you to easily make any size tenon, the ideal tenon should be approximately one third the thickness of the workpiece, *ex. 3/4" thick board would have a 1/4" thick tenon.*

   The thickness (h) of the tenon should be the diameter of the bit. Not: some woodworkers prefer a 5/16" bit when working with 3/4" stock.

2. **Set and lock RouterShop table at 90˚.**

3. **Install a straight bit** in router that is sized equal to the desired tenon thickness (b = h).

   Ex. 1/4" straight bit. An upspiral bit is preferred for cutting mortises since the spiral will eject sawdust from the cut.

4. **"Zero" depth of cut.**

5. **Adjust left and right fences** so that they allow 1/8" clearance on each side of the bit.

6. **Set depth of cut** to dimension d using router's depth adjustment guide.

   Ex. 1/4". Note: When making deep tenons and mortises, make several shallow passes rather than one cut to the final depth.

7. **"Zero" crossfeed.**

8. **Center the bit** on the workpiece by using following formula and note crossfeed scale setting:

   To move bit to board center:

   $$\frac{\text{board thickness (t) in 16th's + router bit (b)}}{2}$$

   ex: $\frac{12/16 + 4/16}{2}$

   or 8 turns clockwise
   of the crossfeed handle

9. **Raise bit** for top tenon cheek cut using the following formula:

   To move bit for top cheek cut:

   router bit diameter (b) in 1/16ths

   ex: 4/16

   or 4 turns clockwise
   of the crossfeed handle

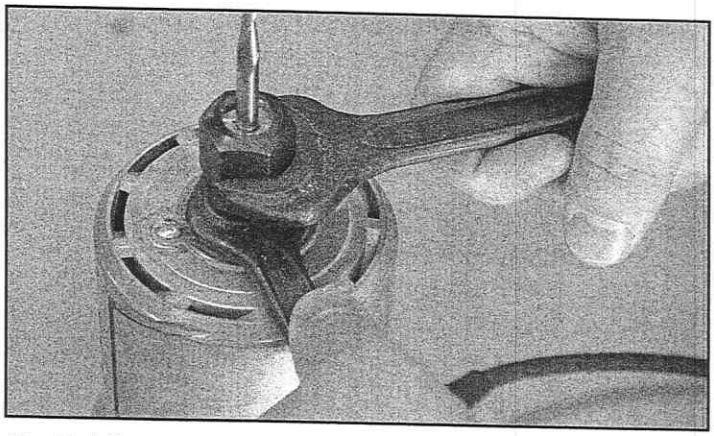


Fig. 13-1. Install straight bit in router.

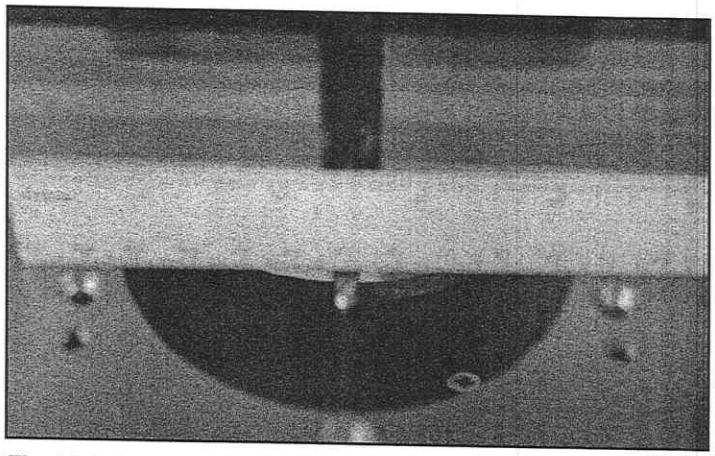


Fig. 13-2. Adjust both fences to 1/8" clearance.

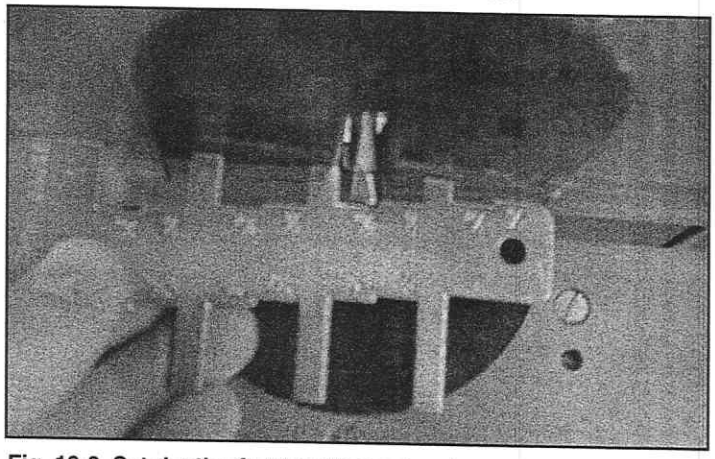


Fig. 13-3. Set depth of cut to dimension d.

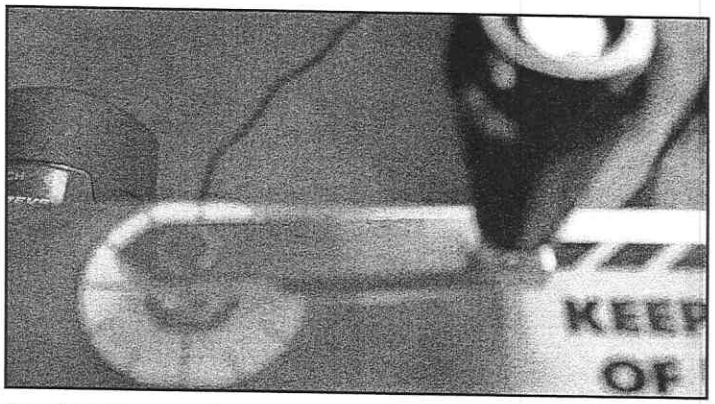


Fig. 13-4. Turn crank number of turns per formula.

Making the Tenon (continued)...

10. **Make top cheek cut** by placing workpiece flat on the table and with the miter gauge, move the workpiece through the bit from right to left.

    On soft woods where compression is possible, carefully make a second pass or back the piece (backcut) from left to right through the cutter. Also, if cutter is causing some tearout, use a matte knife or marking gauge to prescore the cut line.

11. **Lower bit** to make lower cheek cut. Use the following formula:

    <u>To move bit for bottom cheek cut:</u>

    router bit width (b) X 2

    ex: 4/16 X 2

    8 turns counterclockwise
    of the crossfeed handle

12. **Make lower cheek** cut by using mitre gauge and moving workpiece over the router bit from left to right. Be sure to move holddown devices for cutting in this direction.

13. **Position the bit** for making both shoulder cuts by lowering bit to zero crossfeed point and then raising 2 turns for 1/8" shoulder.

14. **Make the shoulder cuts** by using the mitre gauge and moving the workpiece from left to right Make both top and bottom cuts.

15. **Use a hand rasp to round over** the tenon shoulders to fit the round cornered mortise. Be careful not to round over face edges.

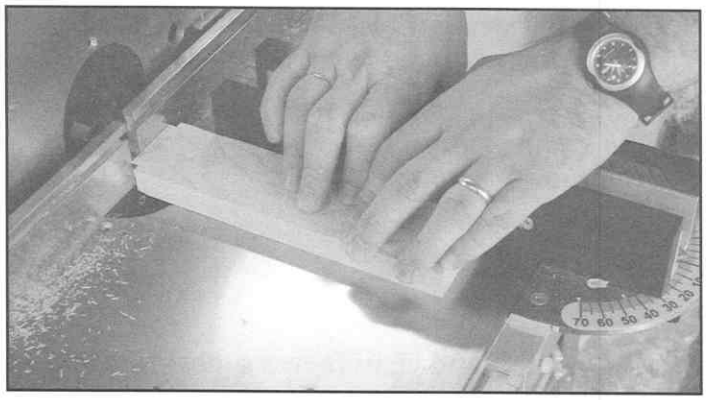


Fig. 14-1: Making top cheek cut. Feed workpiece from right-to left using miter gauge. Inset shows cut.

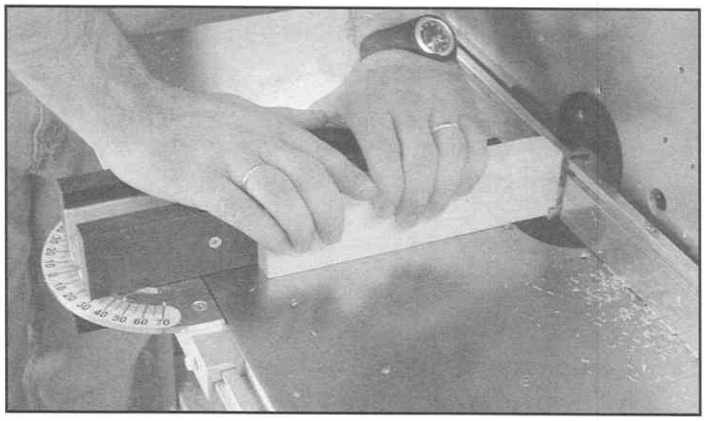


Fig. 14-2: Making lower cheek cut. Workpiece is fed from left-to-right.

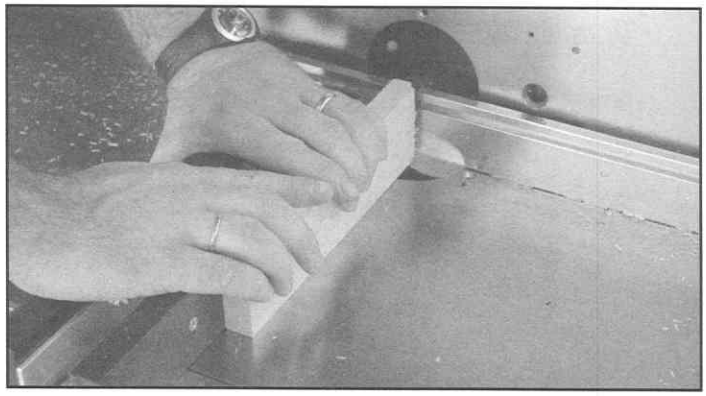


Fig. 14-3: Make shoulder cuts on top and bottom edges moving from left-to-right.

Instructions - Making the Mortise:

16. **Mark the tenon board width** on the surface of the workpiece which will receive the mortise. Be sure that the bottom side is up on both pieces. Note: we mark the ***full board width*** rather than just the tenon width. The reduced mortise width is made by cutting to the fence edges which are 1/8" from bi t— same as shoulder width.

17. **From the Zero point, move the crossfeed** to the board center position by moving the crossfeed the same number of turns as used in Step 8 of making the tenon, i.e.. moving bit to board center. *Ex. 8 turns clockwise.*

18. **Hold the mortise piece flat** on the table with the bit located between the tenon marks. Use the left fence as a guide point and move the left mark into that point when starting the cut. When the bit has reached full depth and the mortise piece is flat against the fence, slowly move the workpiece from left to right until the right-hand mark is at the right fence. At that point, carefully move the workpiece straight out from the fence.

    With both fences adjusted to allow a 1/8" gap (Step 5), the mortise should now allow the tenons to fit properly i.e. 1/8" shoulders equal 1/8" gap.

    Positioning a stop can make cutting multiple mortises easier and more accurate.

To Add a 'Reveal'

The procedures outlined on the preceding pages create a mortise and tenon joint that has faces that are flush with each other.

When you wish to have the tenon piece setback a small amount so that the mortised piece is "proud" or "revealed," add the reveal amount when positioning the cutter for the mortise cut.

Ex., if you want the mortised piece, such as the leg of the table to be out 1/8-inch (2/16ths) from the apron, add 2-turns to Step 17, above, for a total number of 10 turns (8 + 2).

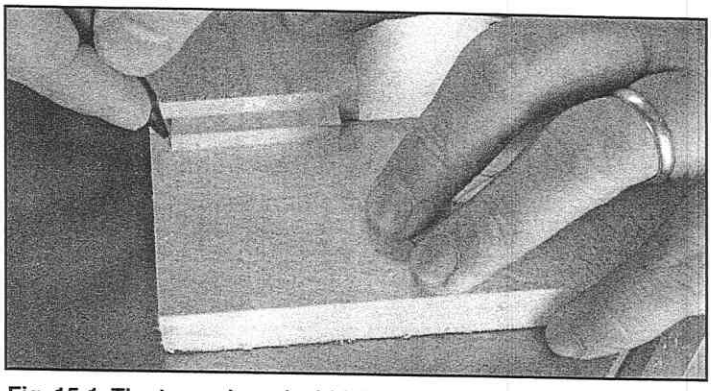


Fig. 15-1: The tenon board width is marked on board where mortise is to be cut.

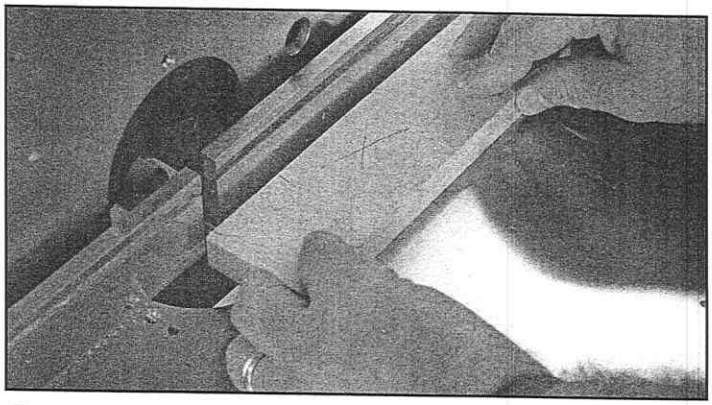


Fig. 15-2: The workpiece is laid flat on table and plunged into bit so that left mark will line up with left fence (above left.) The workpiece is moved from left-to-right until the right mark reaches the right fence (above right.) The workpiece is then moved straight out from the bit.

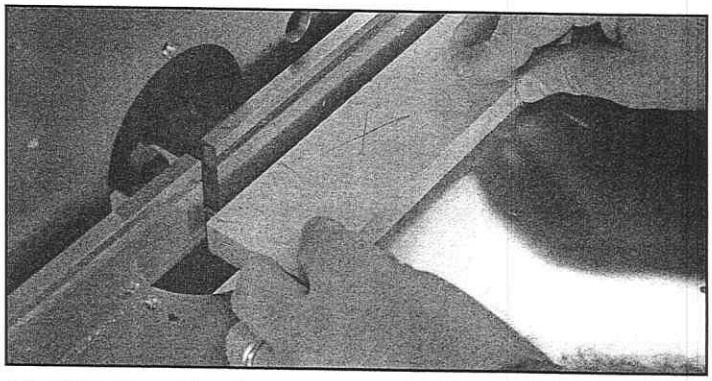


Fig. 15-3: By setting fences to allow 1/8" gap in Step 5, the fences provide an easy and accurate reference for mortise stop positions.

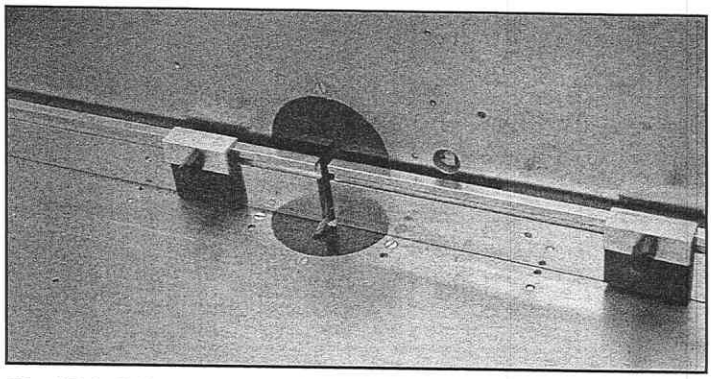
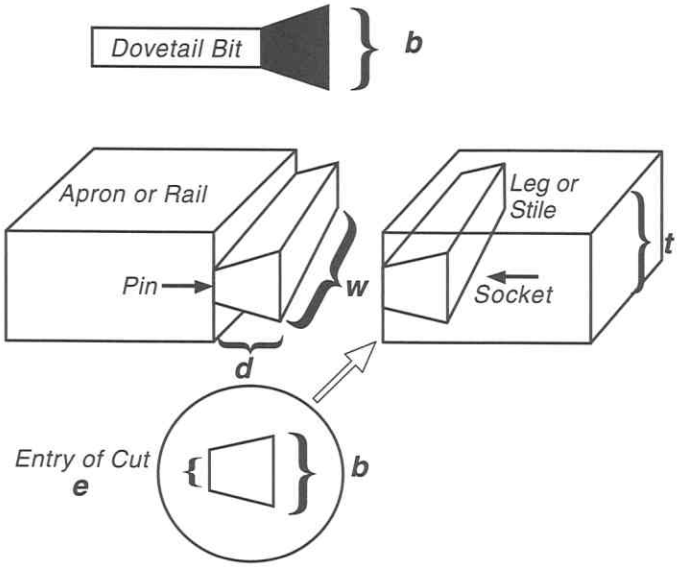


Fig. 15-4: Using a stop allows making multiple mortises exactly the same and quicker.

Making the Sliding Dovetail



Measurements Required:

router bit diameter - b
wood thickness - t
dovetail depth - d
dovetail width - w
entry of cut - e

Between the RouterShop's accuracy and repeatability and the variety of dovetail bits available, the sliding dovetail joint is both attractive, strong and easy to accomplish.

Instructions - Making the Socket:

1. **Layout** the length of the socket (usually equals the length of the rail.)

2. **Set and lock RouterShop table at 90°.**

3. **Install a dovetail bit in the router.** Usually, the width of the bit is 1/3 the thickness of the rail or apron. *Ex. a 3/4" rail would use a 1/4"dovetail bit.*

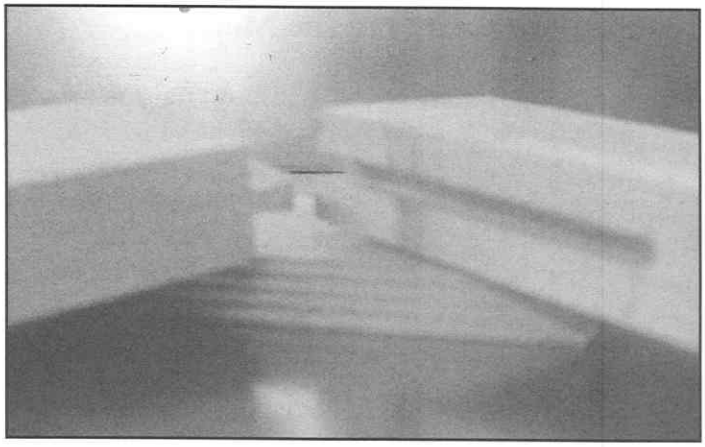


Fig. 16-1: Sliding dovetail joint made with RouterShop.

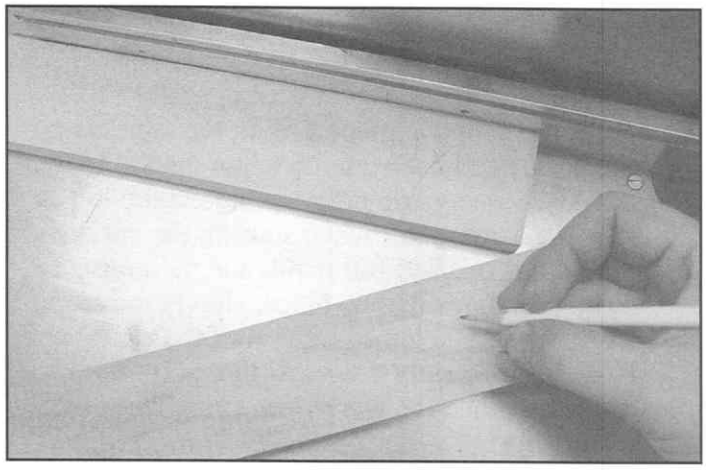


Fig. 16-2: Layout the pin and socket pieces making indicator marks on the backside of the pieces.

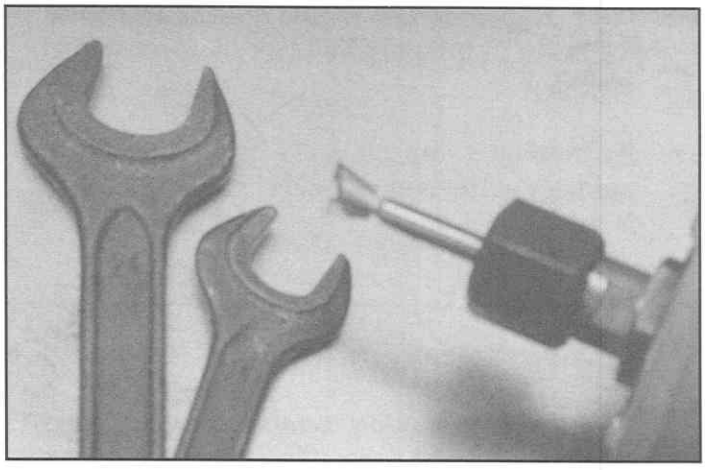


Fig. 16-3: Install a dovetail bit in the router.

CAUTION: Be sure to use holddowns, push sticks and/or other safety items in making all cuts. Always wear proper eye and ear protection.

4. **"Zero" the depth of cut.**

5. **Adjust left and right fences** so that they allow clearance of 1/8".

6. **Set depth of cut.** This will vary based on router bit selected. Depth of cut will normally include entire cutting length of bit. *Ex. 1/4" bit gives approximately 5/16" depth of cut.*

7. **"Zero" crossfeed.**

8. **Move the crossfeed** to socket cut position by using the following formula:

To move bit to board center:

$$\frac{\text{board thickness (t) in 16th's} + \text{router bit (b)}}{2}$$

ex: $\frac{12/16 + 4/16}{2}$

or 8 turns clockwise
of the crossfeed handle

9. **Make the Socket Cut.** Feed work piece from left to right and be careful to keep the work piece against the table and fence. Stop cut when mark reaches fence. This will allow socket to be "hidden." When the cut has been completed, carefully back the work piece away from the bit. Use of stop will provide exact socket lengths.

10. **Measure the "entry point."** Measure the width of the cut at the surface. This is called the "entry point" It will vary depending on bit used and depth of cut The table at the right gives typical dimensions. *Ex. 3/16".*

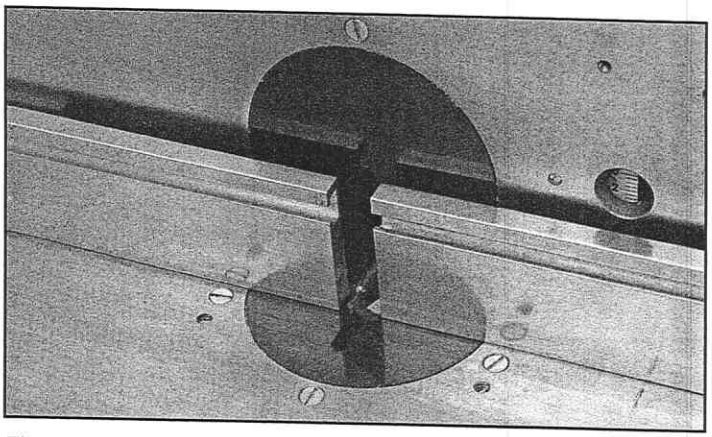


Fig. 17-1: Adjust both fences so that they are 1/8" away from bit.

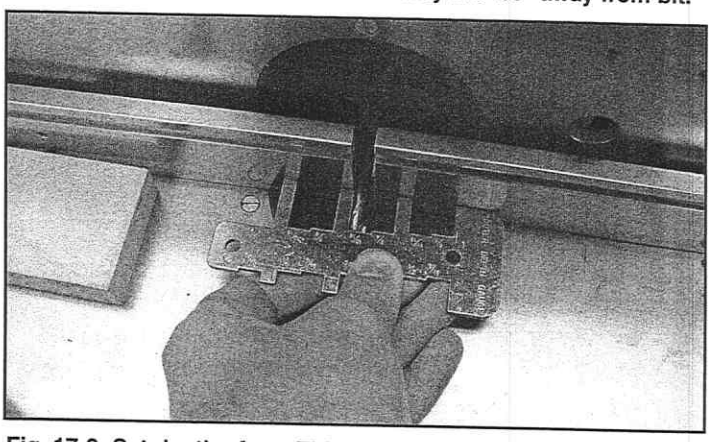


Fig. 17-2: Set depth of cut. This is normally the full depth allowed by dovetail bit selected.

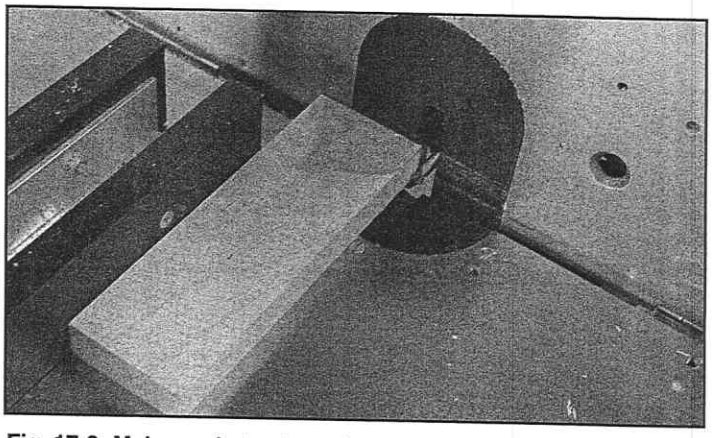


Fig. 17-3: Make socket cut moving workpiece from left-to-right stopping cut when mark reaches fence.

Dovetail Dimensioning Guide*

Stock Width	Use Bit Diameter	Entry	Depth
3/4"	1/4"	3/16"	5/16"
1"	3/8"	1/4"	3/8"
1-1/2"	1/2"	5/16"	3/8"

Note: The Dovetail Dimensioning Guide should be used only as a "starting reference point." Dovetail bits vary, so you should make a sample cut for each dovetail bit recording the reference points.

Instructions - Making the Pin

11. **Raise bit to make the top pin cut** using the following formula: (Remember, this movement is from where the socket cut was made in step 9.)

To raise bit to top pin cut position:

bit diameter (b) + entry cut (e)

ex: $\frac{4/16\text{ths} + 3/16}{2}$

or 3 1/2 turns clockwise
of the crossfeed handle

12. **Make top pin cut** by placing workpiece flat on the table and with the mitre gauge or push block, move the workpiece through the bit from right to left. Be sure to use safety holddown devices. On soft woods where compression is possible, carefully make a second pass. Also, if cutter is causing some tearout, use a matte knife or marking gauge to prescore the cut line.

13. **Lower bit to make lower pin cut.** Use the following formula:

To lower bit for bottom pin cut:

2 times the number used to raise
the bit for the top cut (Step 9)

ex: 3 1/2 turns X 2

or 7 turns counterclockwise
of the crossfeed handle

14. **Make lower pin cut** by using mitre gauge or push block and moving workpiece over the router bit from left to right. Be sure to move holddown devices for cutting in this direction.

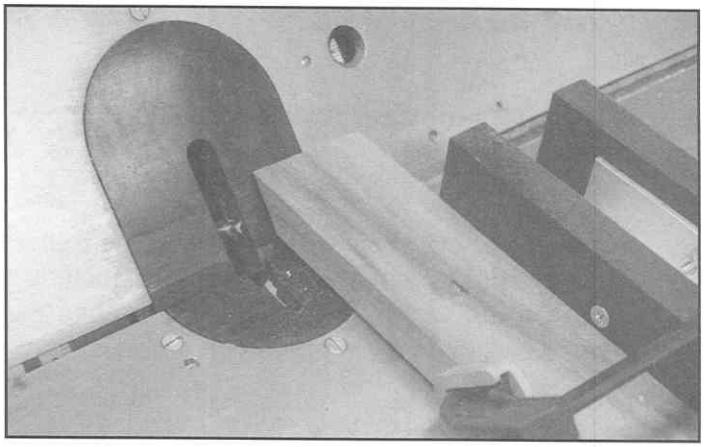


Fig. 18-1: Make the top pin cut by using miter gauge and moving workpiece from right-to-left.

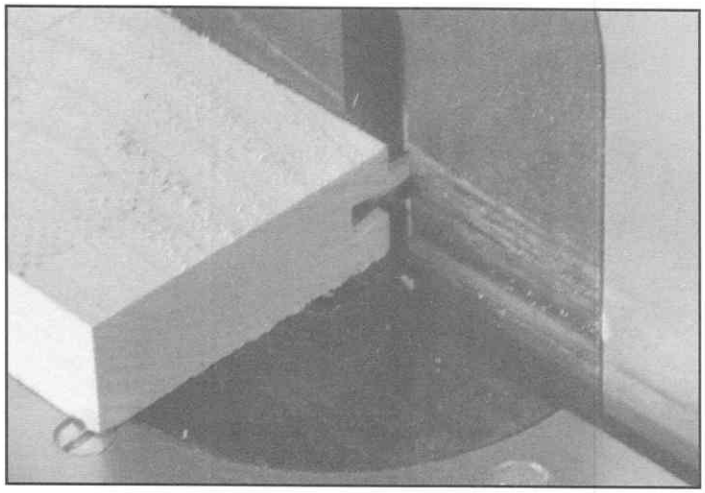


Fig. 18-2: Make the lower pin cut by moving the workpiece from left-to-right.

To Add a 'Reveal':

The procedures spelled out on the preceding pages create a sliding dovetail joint that has faces that are flush with each other.

When you wish to have the pin piece setback a small amount so that the socket piece is "proud" or "revealed," add the reveal amount when positioning the cutter for the socket cut.

Ex., if you want the socket piece, such as the /eg of the table to be out 1/8-inch (2/16ths) from the apron, add 2 turns to Step 8 for a total number of 10 turns (8 + 2).

15. **To make shoulder cuts,** position the bit by lowering it to Zero crossfeed point and then raising 2 turns for 1/8" shoulder.

16. **Make the shoulder cut** by using the mitre gauge or push block and moving the workpiece from left to right. Make the shoulder cut on only the side that will be down in the socket.

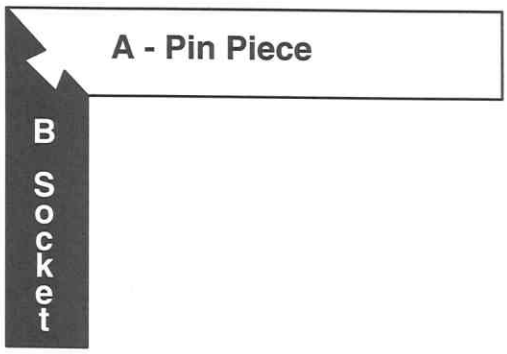
Using Trial and Error:

The formula here does work. You may find that for the first time using a particular router bit, that the finished joint is too tight or a little loose.

Since tightly joints are important, it is suggested that for each dovetail bit used, you make a trial joint using the formula, except that you add or subtract 1/2 additional turn for the top pin cut, make the cut and then take followup cuts by turning the crossfeed in 1/4 turn (1/64") increments until the top pin matches the socket cut. Note the crossfeed scale and "clock" position of the crank and follow the instructions for making the bottom cut.

Once you have a perfect joint, be sure to note all the crossfeed settings for this particular dovetail bit.

Bevel Sliding Dovetail



Once you understand how easy it is to make sliding dovetails, making sliding dovetails on a beveled surface, or beveled sliding dovetails, is a simple matter too. Here's how to do it:

Instructions - Making the Bevel Sliding Dovetail:

1. **Cut the workpieces** to right length making sure that the miter cut is accurate. *Ex. 45°. **Note: Be sure to include in the cut length the depth of the dovetail pin.***

2. **Install a dovetail bit in the router.** *Ex. 1/4" dovetail bit for a 3/4" board thickness.*

3. **Set and lock** the RouterShop tilting table at 45°. For best results, remove the 2 fences. The optional "Slick" Zero Clearance Panel (TA-13) is a useful accessory for making this cut.

   Additionally, the workpiece should be held down firmly when making the cut by using one of the following:

   - the optional auxiliary fence
   - a shop made hold down fence*, or
   - a miter gauge that has built-in hold down clamps.

   * Using either of the first two will prevent the workpiece from riding up the hinged table.

4. **Zero the depth of cut.** Remember, that the zero setting is against the 45° edge of the workpiece.

5. **Set depth of cut.** *Ex: 1/4" bit with 5/16" depth of cut.*

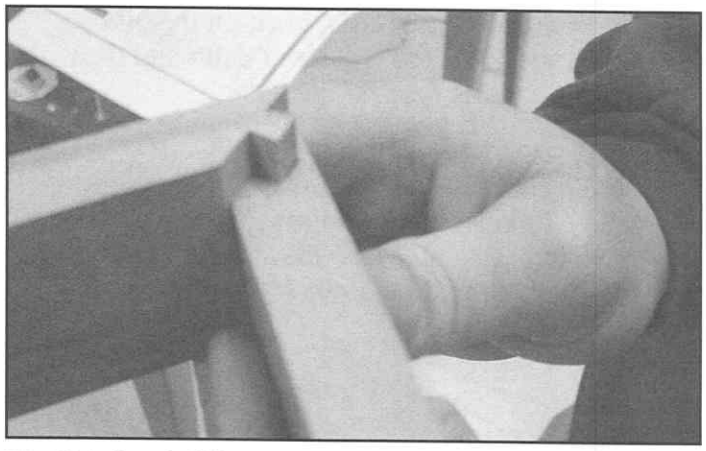


Fig. 20-1: Bevel sliding dovetail joint made with RouterShop.

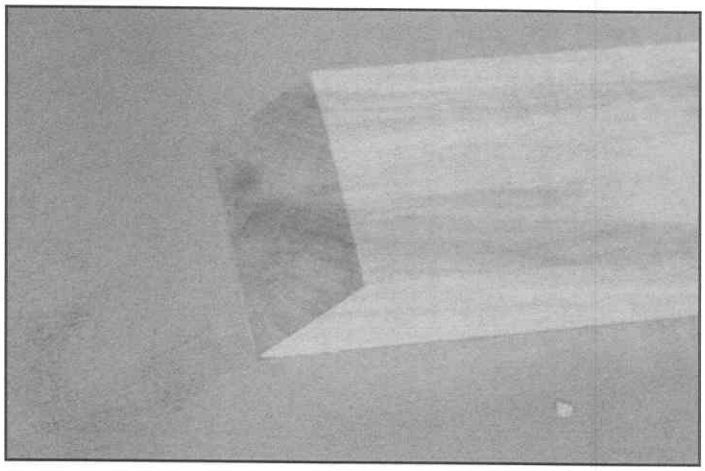


Fig. 20-2: Cut miters allowing extra length for pins.

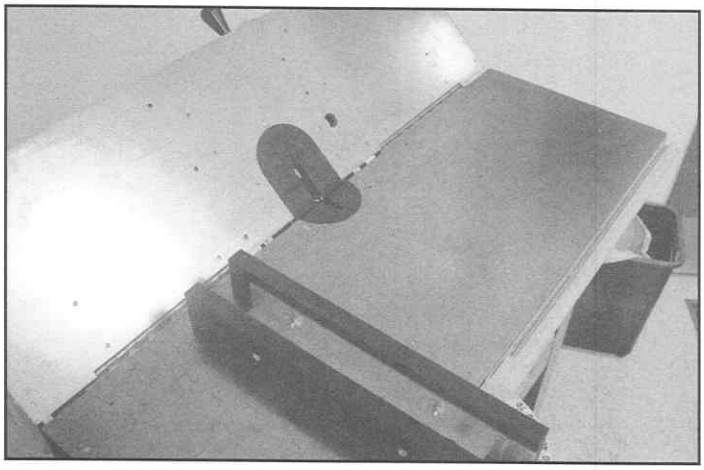


Fig. 20-3: With the RouterShop's tilting table set to 45°, the optional "Slick" Zero Clearance Panel is installed so that the beveled end can move smoothly against the table.

6. **Move the crossfeed** to socket cut position You cannot use a formula here since the socket cut should not be in the center but more towards the bottom. Locate a position that will give you a socket cut approximately 1/3 from bottom. Make a trial cut and adjust up or down until the cut has sufficient amount of wood on both sides of the socket *Note the crossfeed position for repetitive cuts.*

7. **Make the socket cut.** Note: hold the piece firmly against the mitre gauge or push block, use a hold down as mentioned in Step 3 above.

8. **Position bit** for lower pin cut first pass. Use the following formula:

$$\frac{\text{bit diameter + entry cut}}{2} + \text{depth of cut}$$

ex: $\frac{4/16" + 3/16"}{2} + 5/16"$

or 8 1/2 turns counterclockwise

9. **Make the lower pin cut** moving workpiece on table from left to right

10. **Remove other stock as necessary.** You may need to clean up the remaining stock below the cut. Remember to bring the bit back to exactly the same lower pin cut position before moving to the upper pin cut.

11. **Position bit for upper pin cut.** The formula is simple:

bit diameter + entry of cut

ex: 4/16" bit + 3/16" = 7/16"

or 7 turns clockwise.

12. **Make upper pin** cut by moving workpiece from right to left

13. **Remove remaining wood** by raising bit in increments no greater that bit diameter.

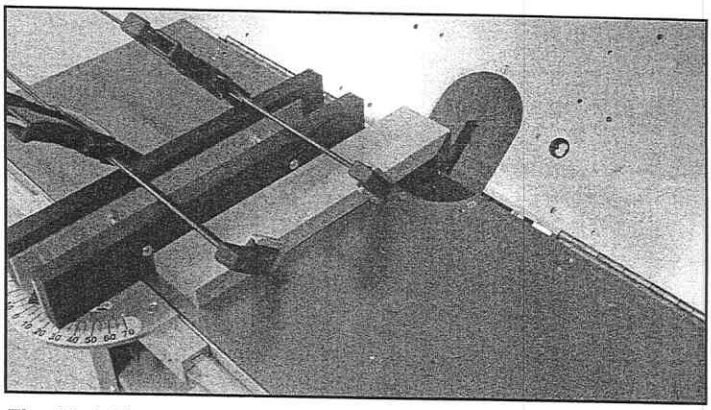


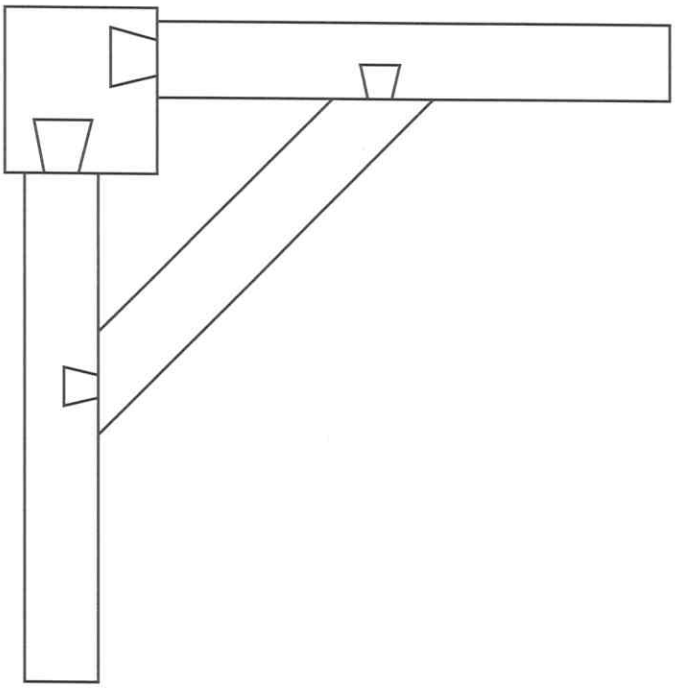
Fig. 21-1: The socket cut is made moving the workpiece from left to right.

Fig. 21-2: Make the lower pin cut moving from left to right.

Remove stock below the last cut and then return bit to lower pin cut position.

Make the upper pin cut, and then remove stock remaining above the cut.

Locking Dovetail Corner



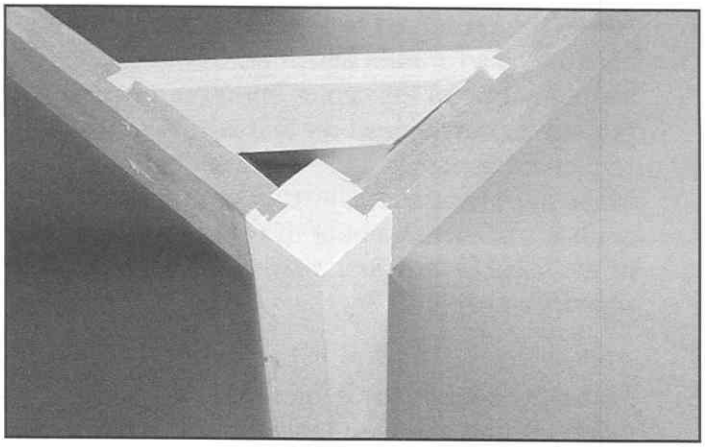


Fig. 22-1: The locking dovetail joint is a superb joint for attaching legs and aprons in tables and chairs. The cross mitre not only adds structural strength but can be used to fasten the table top or seat.

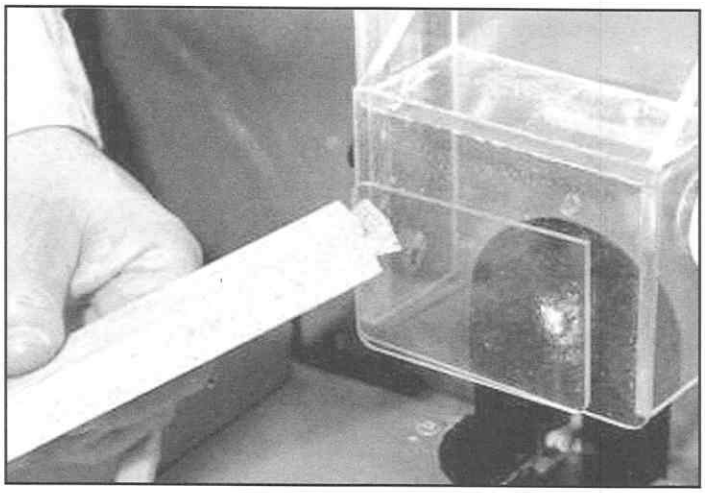


Fig. 22-2: Leg and apron dovetails are made using normal sliding dovetail procedures.

Not only is this joint a sign of good, advanced craftsmanship, it is a joint that is very useful in making sturdy corners for tables and chairs. In fact, it is not a joint in itself but a combination of joints—the sliding dovetail with reveals for the aprons into the leg, and angle sliding dovetails for the crosspiece. Since each joint is outlined in preceding pages, this procedure will simply recap the steps.

Note: Some may say that this joint is "not for beginners." But if you follow the procedures carefully and make note of everything you do, you will be delighted to see just how rapidly you can move from "beginner" to "advanced." Remember, once you have made the "perfect" joint and have notated every measurement, you can make the same joint perfectly each and every time.

Instructions - Making the Leg Sockets:

1. **Make the leg sockets** just as you would sliding dovetails adding the desired setback or reveal.

2. **Make the pins** on the aprons to fit the leg sockets.

3. **Attach the aprons** to the leg making sure that the joint is a true 90° — use a carpenter's square to keep the joint at 90° when measuring the crosspiece. The crosspiece should be aligned with the aprons at 45°.

4. **Layout where the crosspiece brace** is to be positioned. In addition to the two edges, mark the midpoint.

5. **Cut sockets where marked.** Place the table in the flat (0°) position. Note: while the crosspiece attaches at a 45° angle, the pin is perpendicular to the apron.

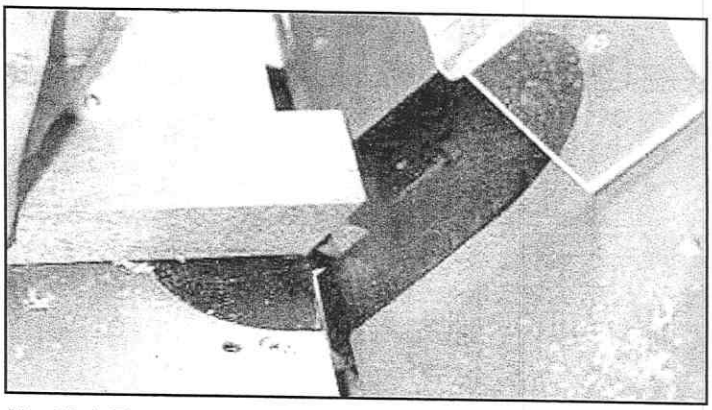


Fig. 23-1: The cross piece is placed at the desired location using a carpenter square's 45° to align. The mid-point of the socket pieces are marked on each apron.

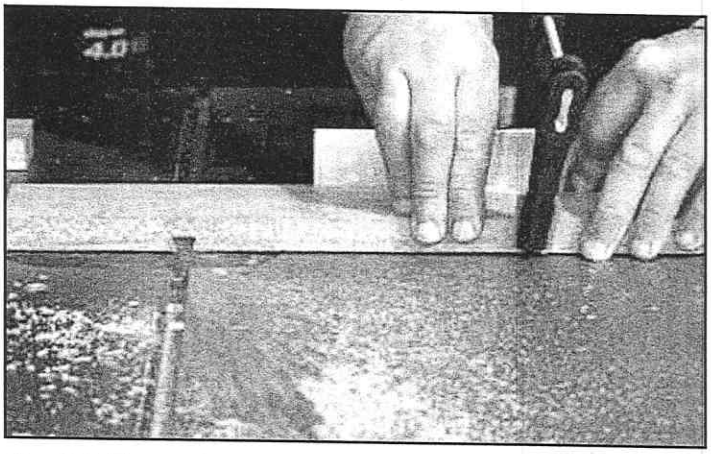


Fig. 23-2: The sockets are cut with the table flat so that the dovetail is perpendicular to the apron even though the crosspiece will enter at an angle.

Instructions - Making the Crosspiece Brace:

6. **Measure the distance** between the inside bottom of each socket.

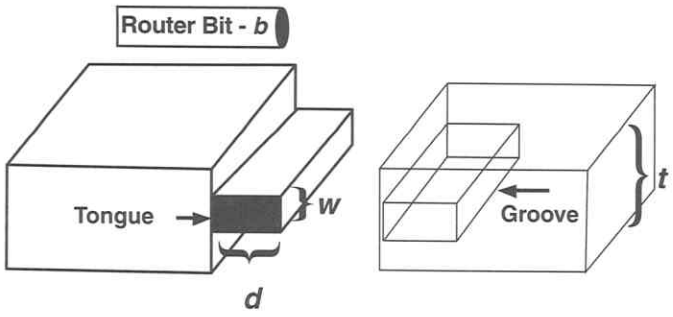
7. **Crosscut the brace** to the exact dimension of Step 6. Be sure to make accurate 45° cuts.

8. **Make the pins on the crosspiece.** You should be able to make these by following the procedures and your measurements in making the pins of the Bevel Sliding Dovetail Joint,

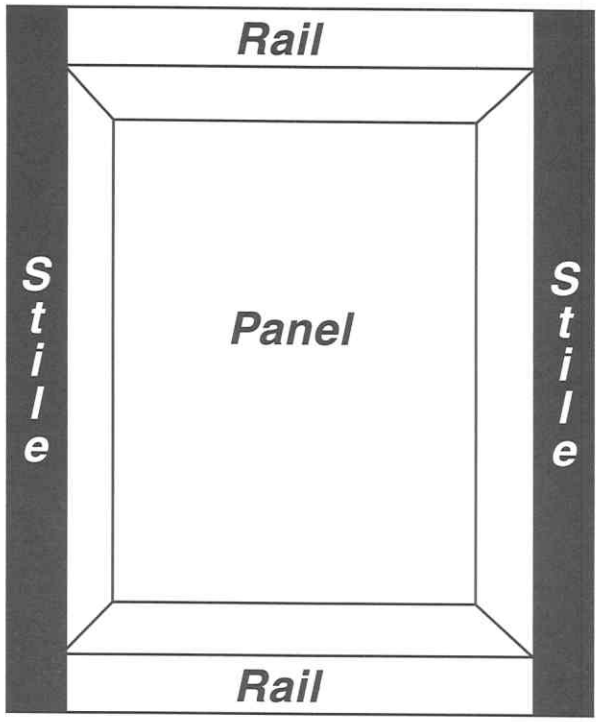
Note: You should make a practice crosspiece and adjust the pins until they are snug and adjust the length of the crosspiece until the joint is rigid and square.

CAUTION: Be sure to use holddowns, push sticks and/or other safety items in making all cuts. Always wear proper eye and ear protection.

Tongue & Groove Joint



The tongue and groove joint is easy to make and excellent for making the rails and stiles of panel doors and cabinet construction. This joint is similar to the mortise and tenon. The tongue being the tenon and the groove the mortise. The exception is that the groove runs the full length of the board providing a groove to insert the panel in addition to being part of the joints of the rails and stiles.



Instructions - Making the Tongue & Groove Joint:

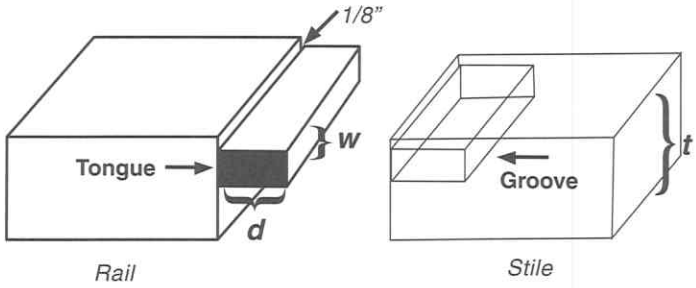
1. **Layout the stiles and rails and mark them** — *ex. "A" for the Rails and "B" for the stiles. Usually the rail and stile material is the same thickness and width, but it need not be. By marking the backside and keeping the face side down for all cuts, the face of the rails and stiles will be nice and flush, no matter what slight differences there may be in the stock.*

2. **Cut pieces to length.** Stiles should be cut to finished length. Rails should be cut to finished length plus 2 times the depth of cut (d). Cutting to length can also be accomplished after the groove cut is made.

3. **Set and lock RouterShop table at 90°.**

4. **Install a straight bit** in the router that is size equal to the desired tongue width. *Ex. 1/4"* An upcut spiral bit is preferred for cutting the tongue since the spiral will eject the sawdust from the cut. Be sure that it is an *upcut* spiral bit.

5. **"Zero" depth of cut.**



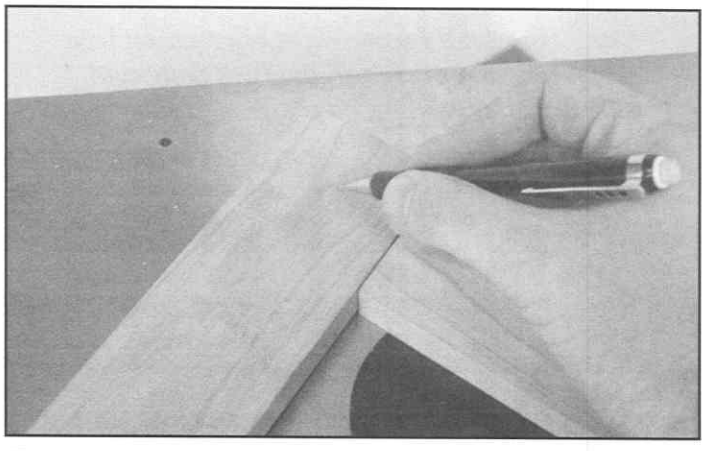


Fig. 24-1: Frame pieces are cut to length and marked.

6. **Adjust left and right fences** so that they allow minimal clearance to the bit. *Ex. 1/3".*

7. **Set depth of cut to dimension d.** *Ex. 3/8".*

8. **"Zero" crossfeed.**

9. **Move the bit to make the groove cut.** Ex. we will cut the groove 5/8" from the face side (1/8" from the back.) With this groove, the raised panel will be flush with the frame pieces — see cross section. Otherwise the groove is normally centered. We will use the following formula:

   To cut groove 5/8" from the face:

   ex: 5/8 = 10/16

   or 10 turns clockwise of the crossfeed handle

10. **Make the groove cut on all pieces.** Position holddowns on both fences to allow cutting from left to right Additionally, place one or more holddowns in the table's miter slot to keep uniform pressure on the stock against the fence. Cut all pieces (stiles and rails). Be sure face side is down (marked sides up.)

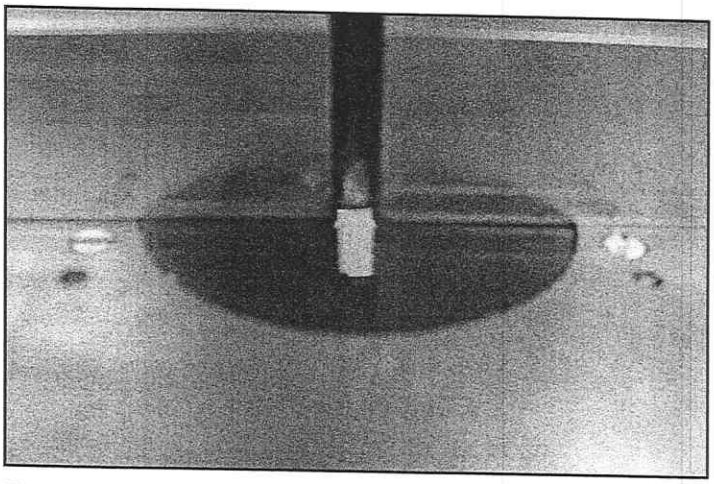


Fig. 25-1: The fences are adjusted to provide 1/8" clearance to the bit.

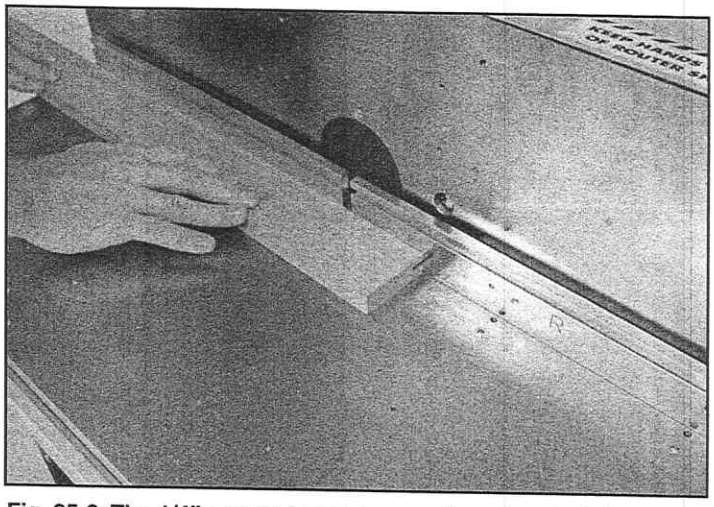


Fig. 25-2: The 1/4" groove is not centered on the stock but is positioned 1/8" from the back of the frame. This will allow the raised panel's front surface to be flush with the frame.

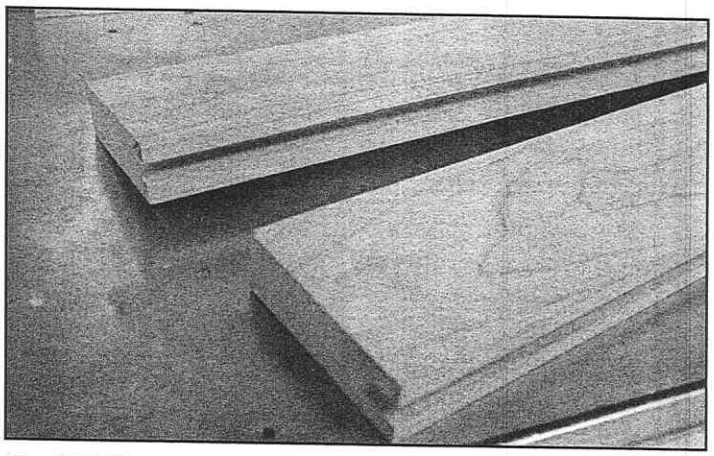


Fig. 25-3: The groove is cut along the length of all pieces using both vertical and horizontal hold downs and moving the workpiece from left-to-right.

Making the Tongue and Groove (continued)...

11. **Position the bit** to make the upper tongue cut on the ends of both rails using the following formula:

    <u>To move bit to make upper tongue cut:</u>

    bit diameter (b) in 16ths

    ex: 4/16 or 4 turns

    clockwise of the crossfeed handle

12. **Make the upper tongue cuts** on ends of all rail pieces (a). Use a mitre gauge or push block and move the workpiece right to left through the router. If you experience tearout when making these cuts, use a utility knife or marking gauge to prescore the cut line.

13. **Position the router** to make the lower tongue cuts by lowering the router bit 2 times the bit diameter, *ex. 2 X 4/16th's or 8 turns counterclockwise.*

14. **Make the lower tongue cut** using the mitre gauge or push block and passing the workpiece from left to right.

15. **Remove rest of lower material** by lowering the router bit the number of turns equal to the diameter of the bit, *ex. 4/16th or 4 turns counterclockwise.*

    The tongues should fit firmly into the groove and offer a tight joint

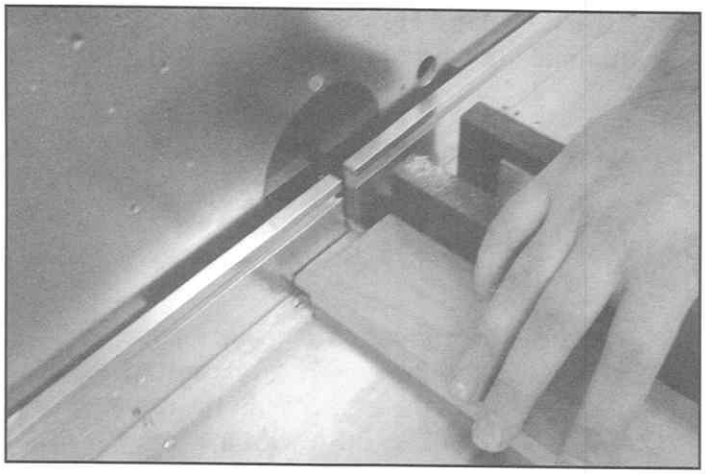


Fig. 26-1: A mitre gauge or push block is used to make upper tongue cuts.

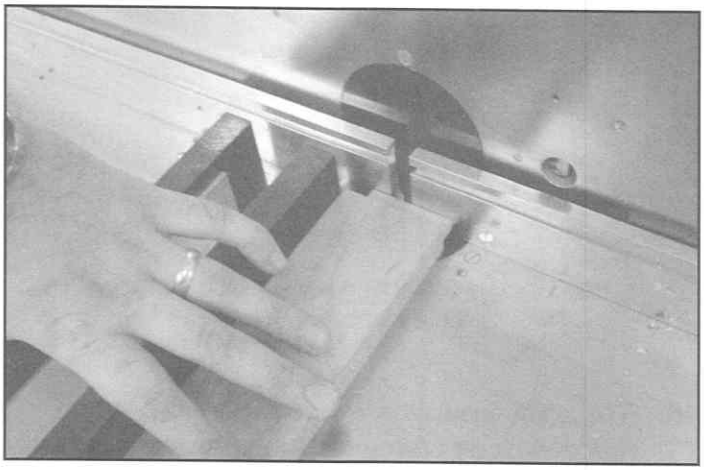


Fig. 26-2: The lower tongue cuts are made.

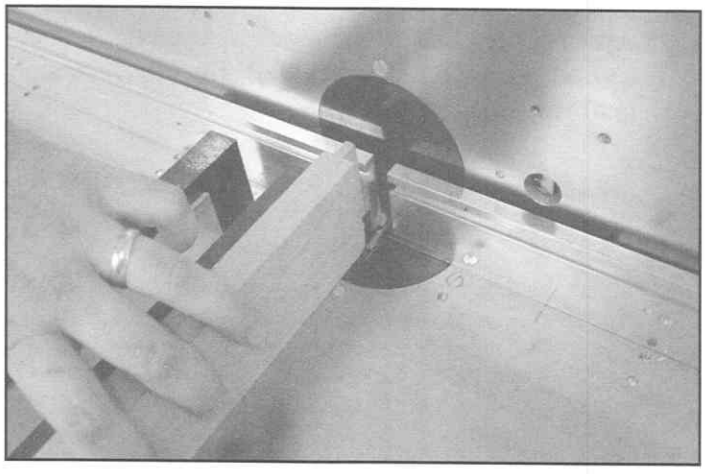
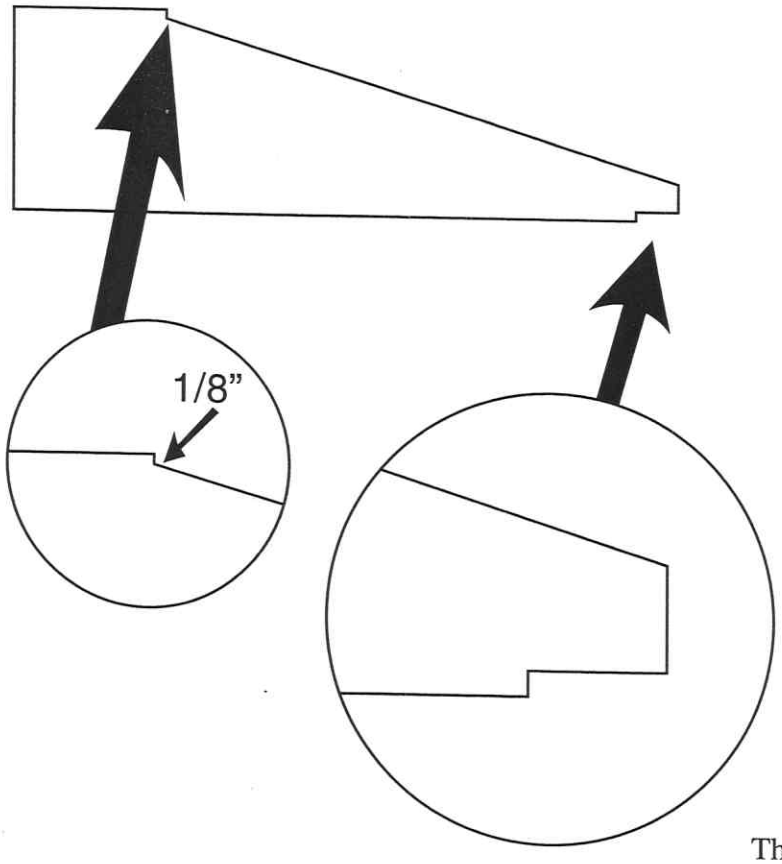
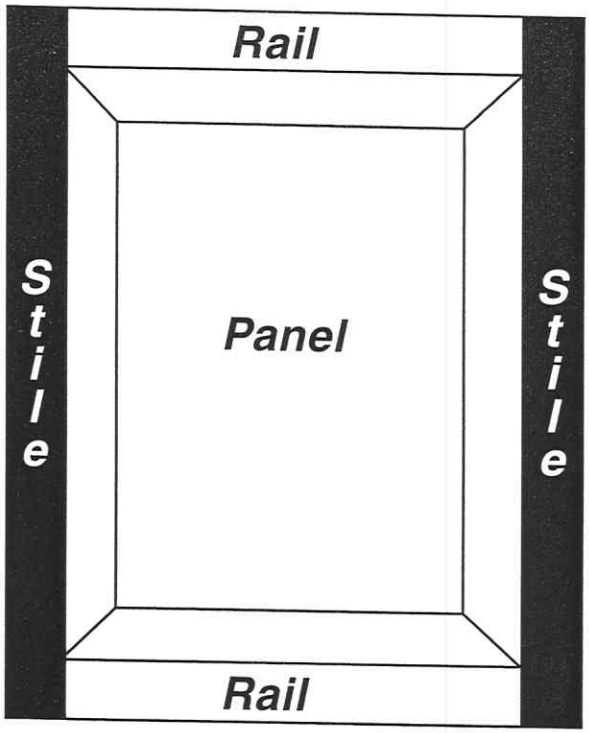


Fig. 26-3: The rest of the material is removed.

Making the Panel





The panel shown above is made with only the use of a straight bit. While a 1/4" straight bit could be used, we need a bit of greater length in order to cut the bevel area. A 1/2" straight bit is used with a 1/2" shank.

In the drawings above, the closeup illustration at left shows that the bevel is recessed slightly where it meets the flat panel. This is not a special cut but will be made on the final bevel pass. A reveal of about 1/8" is ideal.

The closeup at right shows the back side which has a very slight rabbet (1/8'), which should equal the distance of the backside of the groove. This allows the back of the panel to be flush with the frame. Generally, the panel back should be flush with the frame. The same for the front although there will be times when the front of the panel may be "proud" of the frame. You can build this panel assembly to your exact needs. Just change the dimensions and cut accordingly.

This closeup also shows that the bottom width which will fit inside the groove will be 1/411, the grooves width. It is important that the panel be -loose enough in the groove so that it floats freely so that the panel will not split during periods of expansion and contraction.

Instructions - Making the Raised Panel:

1. **Cut panels** to final size + 2 times the depth of the groove minus 1/8" for future expansion/ contraction.

   Ex. for finished 12" X 24" panel:

   12" + 2(1/4") - 1/8" or 12-3/8" wide

   24" + 2(1/4") - 1/8"or 24-3/8" long.

2. **Mark the backsides of each panel.** For making the panels, the backside will be down for cutting the panel. Note this is different than from making most joints. It is necessary for cutting the bevel.

Making the Raised Panel (continued)...

3. **Set and lock RouterShop at 90°.**

4. **Position the bit for the bottom cut.** This cut will allow the panel to be flush with the back of the frame. Use the following formula:

   From the "zero" crossfeed point, add 2 turns (1/8") clockwise.

5. **Make the bottom cut.** Cut the end grains first to minimize tearout, Make the cuts from left to right. Use a pushblock to keep uniform pressure on the panel when making cuts.

6. **Tilt table to angle of bevel.** The angle you select will be made on personal preferences and choice of bit. *Ex. 70°*

7. **Adjust depth of cut** to provide width of the bevel. Usually you will want to use the maximum depth in order to give the best proportioned bevel. *Ex. we are using a 1/2" straight bit that is 3-1/8" long. At full depth, it gives a maximum bevel cut of 1-1/2" but we will set the depth to give a 1-3/8" cut at 70°. This keeps the bevel in proper proportion to the whole.*

8. **Raise bit height** by adjusting crossfeed until the bottom edge of the bit is just at the top of the workpiece, then lower the bit about 2 turns (1/8") to make the first cut.

   With the bit so extended, you do not want to remove too much stock on each pass. Two turns, 2/16", should be possible at each pass depending on the type of wood, horsepower of the router and sharpness of the bit. It's better to make more passes of lesser cuts than to overheat router and bit.

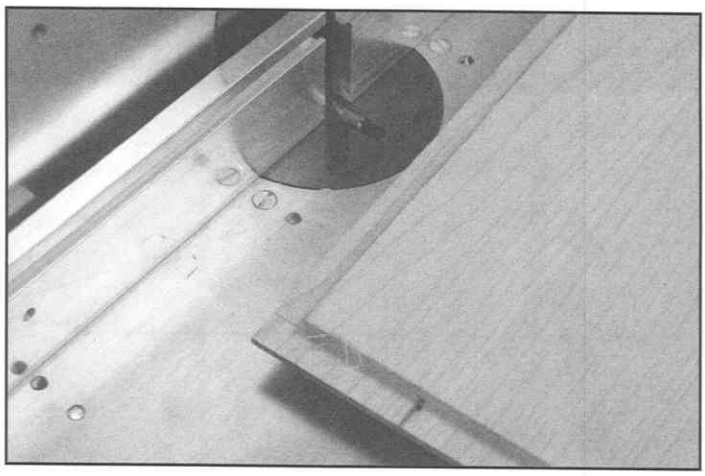


Fig. 28-1: Start by cutting the bottom 1/8" groove. Move the panel from left-to-right cutting end grain cuts first.

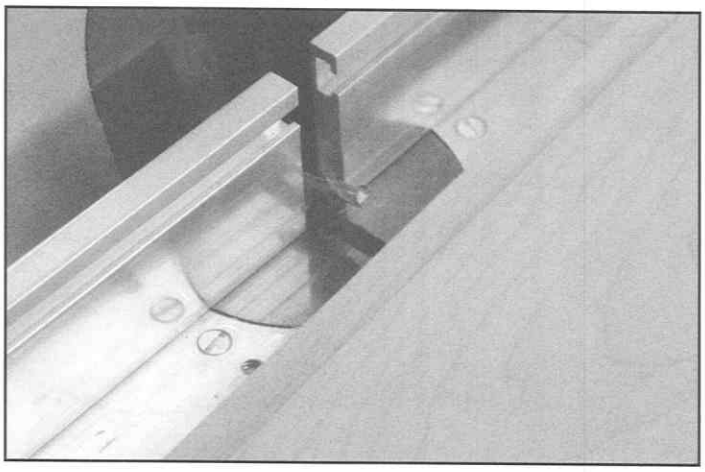


Fig. 28-2: When using a straight bit to cut the bevel, the table is tilted to the desired setting.

9. **Make the cuts** with end grains first. Feed the workpiece from right to left using a push block to keep the panel flat on the work table.

10. **Continue until the edge width is just 1/4" wide.** At this point, you still want to remove about 1/16th of an inch (1 turn). The reason for making this last pass by itself is to remove the least amount of material. This will give you the smoothest final cut and little to no sanding will be required.

11. **Assemble the parts.** The panel should sit in the groove with some small degree (1/16th) of play. Do not glue or fasten the panel in the frame. Glue should be used for fastening the rails and stiles. Small brads can be added from the backside to pin the joint

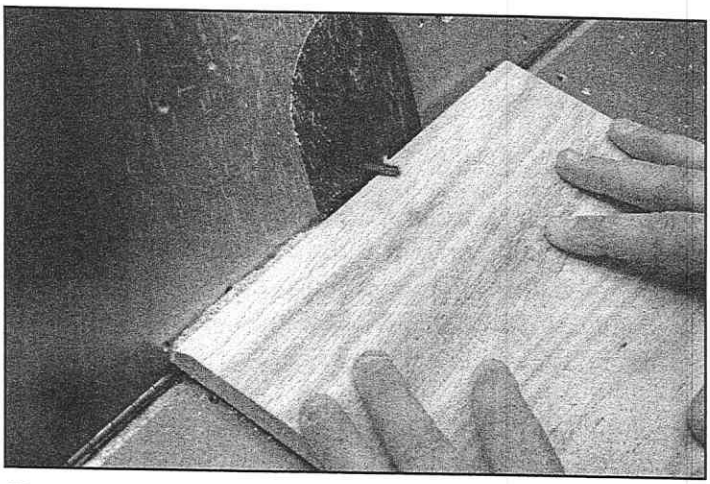


Fig. 29-1: Make the cuts moving the panels from right-to-left cutting end grains first. Only t/8" is removed on each pass. Use holddowns and/or a hand push device to keep the panel flat on the table and against the fence.

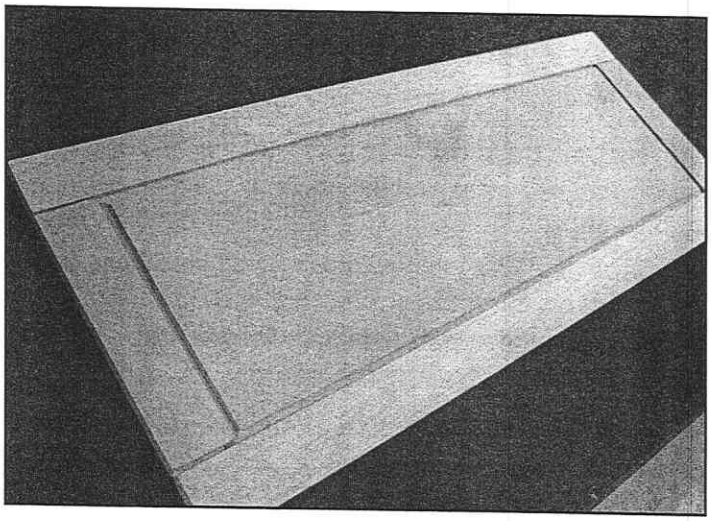


Fig. 29-2: The panel can now be assembled. The rails and stiles should be glued and pinned with finish nails from the back side. The panel should not be glued so that it can float in the frame.

Amazing...and only using straight bits.

You will be amazed that you can make the complete door with this just two straight bits. And the door can be as beautiful as any panel door or side you've ever seen.

That doesn't mean that panel doors can't be fancier. On the next pages, you'll see how to make panel doors using your RouterShop and some of the many curved panel and rail/stile bits that are available.

Making Panel Assemblies Using Specialty Bits

There are many special router bits that are specifically designed to cut panels and rails/stiles. It the past few pages, procedures have been detailed for making these pieces using only straight bits—bits that you probably already have.

For the most part, the use of these bits in the RouterShop is very simple. A brief summary is given below.

Raised Panel Bits

These bits come in two types — ***horizontal*** and ***vertical***.

Horizontal Raised Panel Bits - The horizontal bit's width means that you must use a router that can reduce speed.

Additionally, you must remove wood slowly so that the strain on the bit is not too great ***We do not recommend the use of these horizontal bits***.

Vertical Raised Panel Bits - Vertical raised panel bits are specifically designed for router's and can be used at normal router speeds. The RouterShop is ideally suited for these bits since tilting the table to 90° allows the panel to be cut in the horizontal position smoothly and safely—just as when making the panels using. straight bits. In traditional router tables, a tall vertical fence would have to be made even then, keeping uniform pressure on panels positioned vertically is difficult

Note: When using vertical panel bits, the workpiece will be above the bit so the workpiece should be fed from ***left to right***.

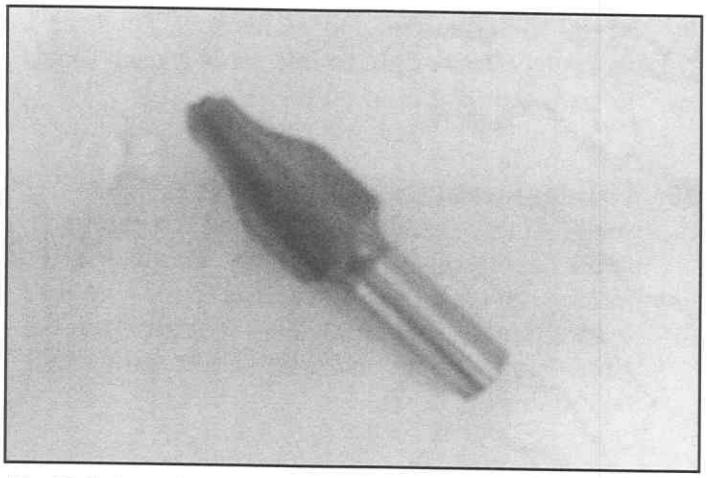


Fig. 30-1: A vertical raised panel bit can be used at the standard router speed.

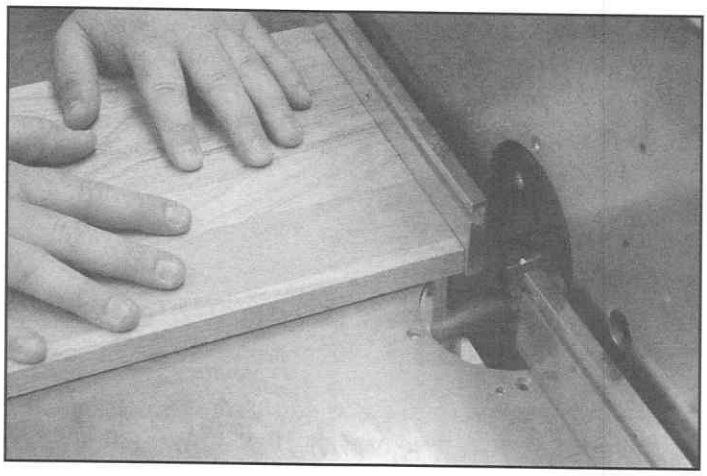


Fig. 30-2: By using vertical raised panel bits in the RouterShop set at the 90' position, the panel workpiece can lay flat on the table. Since the router bit will be underneath the panel, move the workpiece from left to right.

A horizontal raised panel bit is quite wide and requires reducing the router's speed.

Rail and Stiles Sets

There are two basic configurations of rail and stile router bit sets — set of two matching bits and single, combination or stacked bits.

These are illustrated at the right There are pros and cons of each, but both can deliver excellent results in the RouterShop. This unit's accuracy and repeatability features allow excellent results with each type bit.

There are many rail and stile profiles. Three such shapes are illustrated at the right.

Rail and stile sets are available as matched sets or as single combination or stacked bits.

Using Rail-and-Stile set with the RouterShop

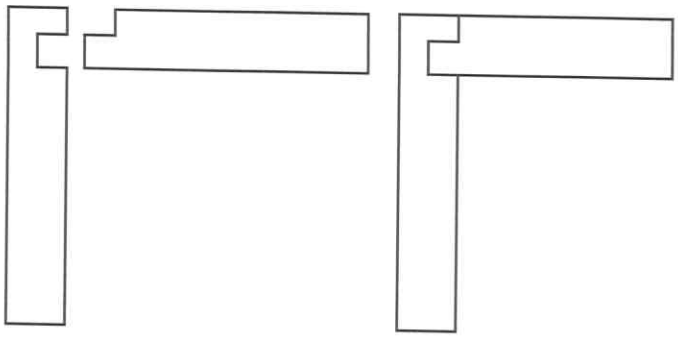
The RouterShop is put in the flat (0°) position and is used as a standard router table when using rail and stile bits.

These bits are most easily changed by moving the table to the 90° position, making the bit change and then returning to the flat position. When using 2-bit combination sets, making sure that both bits are at the same height (router bit depth) is necessary for rail and stile pieces to match. Zeroing depth of cut and then resetting the depth used by both bits will ensure that both cuts will mate properly.

Always use both vertical and horizontal hold downs when cutting rails and stiles.

When more than one pass is required, the crossfeed adjustment will give you the accurate repeatability of the final cut that is required for ensuring that the pieces will fit correctly.

Corner Dado Joint



This is a quick and easy joint to make. It is often used in making boxes and cases, such as drawers, either for the back side only or both back and front when a finished front is then added.

A straight bit should be used that is one half the thickness of the wood, so on 1/2" drawer sides and back, a 1/4" straight bit would be used.

Instructions - Making the Corner Dado Joint:

1. **Layout** all pieces marking the **<u>outside</u>** of the workpieces.

   <u>Cut Sides First:</u> It's important to cut the dado in the side pieces, first. This will allow you to adjust the end pieces (tenons) to the groove and allow for slight variation of board thickness.

2. **Set and lock RouterShop table at 0°.**

3. **Install a straight bit** in router that is sized equal to one half the thickness of the board. *Ex. 1/4" straight bit for 1/2" drawer sides and back.*

4. **"Zero" depth of cut.**

5. **Adjust left and right fences** so that they allow 1/8" clearance on each side of the bit.

6. **Set depth of cut** to dimension equal to router bit diameter. *Ex. 1/4".*

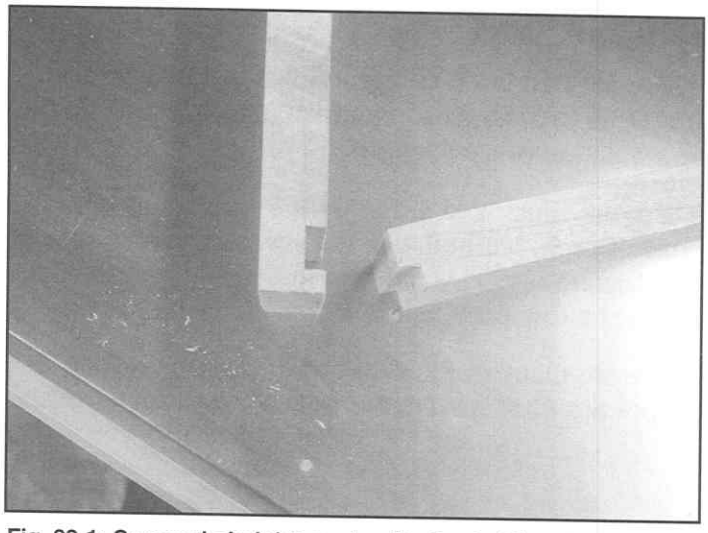


Fig. 32-1: Corner dado joint made with RouterShop. This is an easy, quick but serviceable joint particularly used in drawer backs.

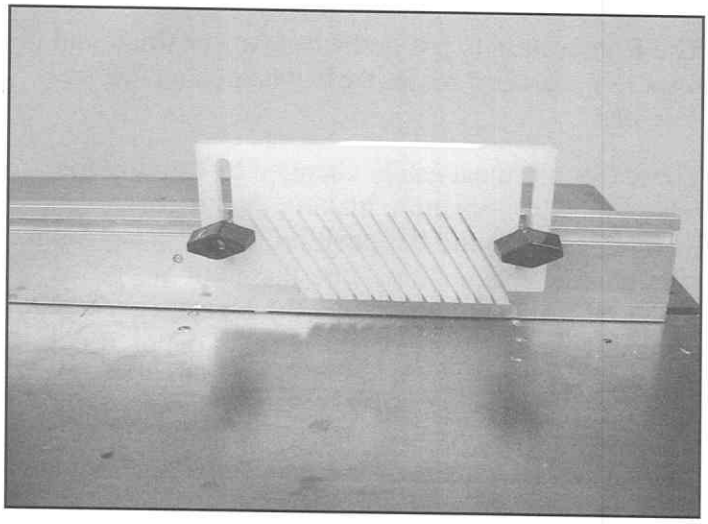


Fig. 32-2: Layout sides, back and front and mark outsides of each piece.

7. **"Zero" crossfeed.**

8. **Move crossfeed** by turning crossfeed handle clockwise equal to the thickness of the board. *Ex. board is 1/2" or 8 turns, so move the crossfeed bit by 8 turns clockwise.*

9. **Make the cuts on all side pieces** by placing the piece with inside face down. Use the miter gauge to make the cut moving the piece from right to left over the table.

Now Cut Backs and Fronts:

10. **Set and lock RouterShop table at 90°.**

11. **"Zero" depth of cut.**

12. **Set depth of cut** to dimension equal to router bit diameter. ***Ex. 1/4"***

13. **"Zero" crossfeed.**

14. **Move crossfeed** 2 times the width of the router bit. *Ex. bit = 1/4" or 4/16" so move crossfeed 4 X 2, or 8 turns clockwise. [Note: by making a sample cut and then adjusting the setting slightly will allow you to make tight fitting joints even with minor wood thickness variation. There is seldom an exact/y 1/2" or 3/4" piece of wood.]*

15. **Make the cuts.** Place the piece with outside facing up. Use the miter gauge to make the cut moving the piece from right to left over the table.

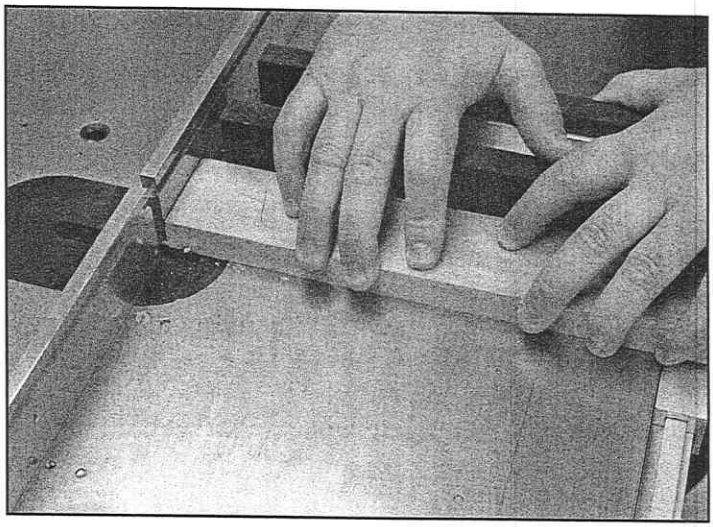


Fig. 33-1: Cut the dado in the side first. This will allow you to make minor adjustments for material thickness.

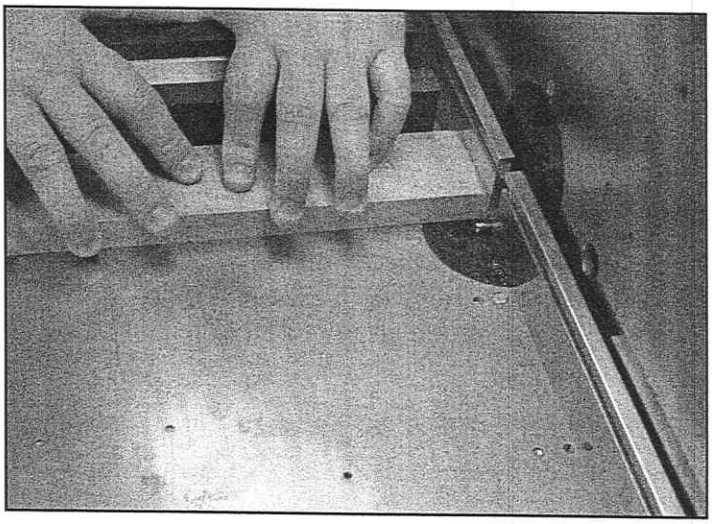


Fig. 33-2: For cutting the front and back, the table is set to 90° and the depth is adjusted equal to the router bit diameter.

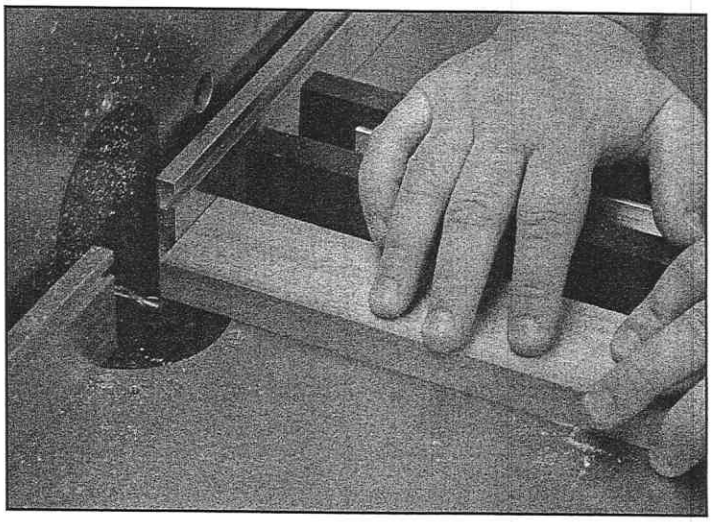


Fig. 33-3: The front and back are cut by moving the pieces right to left. The cut line can be prescreen to prevent tearout.

Using Your RouterShop™ as a Jointer

Equipped with a straight bit, the RouterShop can do an excellent job in jointing boards. Even though the table is relatively compact, even long boards can be given a great joined edge since the bit is in the vertical position. With the workpiece laid flat on the table, the board can be fed into the cutter at a smoother rate without unevenness that would mar the joint. Traditionally, jointing long boards would be possible only on long bed joiners. Set your RouterShop up as pictured at the right and just see how well you can joint boards of all lengths.

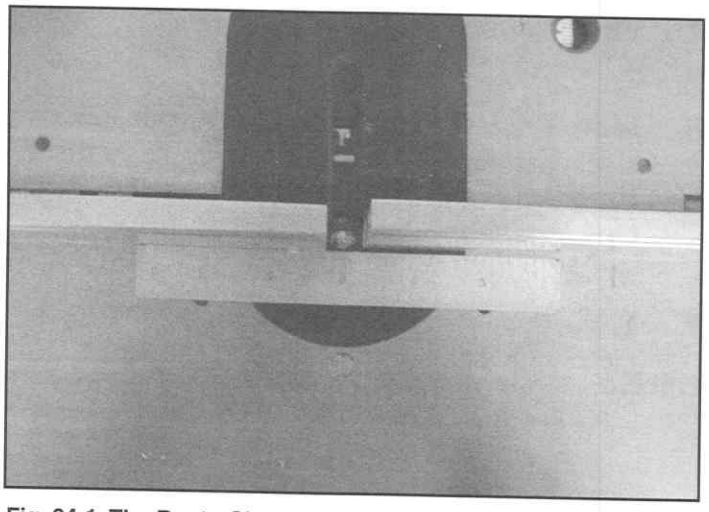


Fig. 34-1: The RouterShop can become an excellent jointer by installing a straight bit and setting the fences according to instructions. By using infeed and outfeed roller stands, long boards can be jointed as well.

To Set Up the RouterShop as a Jointer:

1. **Install a straight bit in the router.** Use a 1/2" or 3/4" carbide bit. The larger diameter will give a better cut. Also, a straight bit with a 1/2" shank is recommended. Up cut spiral bits can give you a smoother and faster cut.

2. **Adjust the router bit depth of cut** to about 1/8" greater than the board thickness.

3. **Adjust the right fence (infeed)** approximately 1/16" back. Use a thickness gauge or a 1/16" drill bit to set this distance accurately. *Note: 1/16" is about the most you should remove in one pass; you can always set this fence back less — 1/32" offset will take off less and give better cuts, but take longer.*

4. **Adjust the left fence (outfeed)** to the full forward position.

5. **Adjust both left and right fences** to provide minimum clearance to the bit. *Ex. 1/8".*

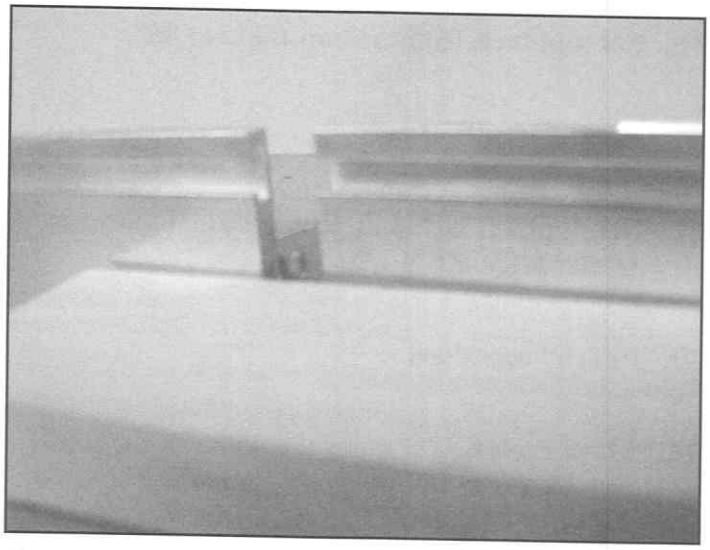


Fig. 34-2: The bit depth is adjusted so that the bit is about 1/8" higher than the board thickness.

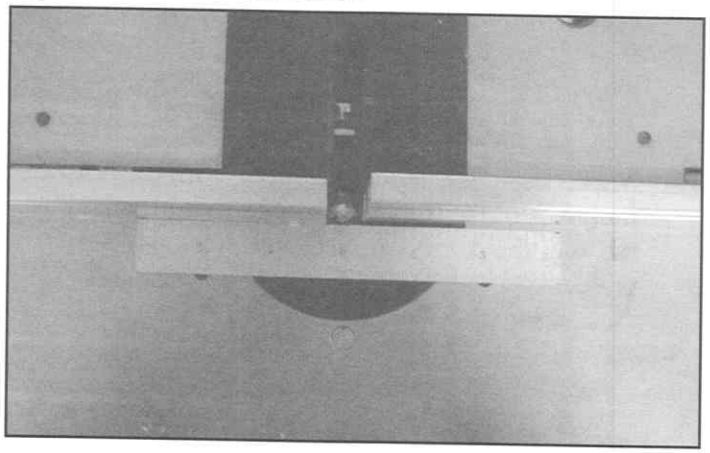


Fig. 34-3: Adjust the right fence so that it is approximately 1/32" the leading edge of the slot. Above, a scraper blade is used as a thickness gauge to accurately set this dimension. The left fence is adjusted all the way to the forward edge of the slot.

6. **Move crossfeed until** the bit's cutting edge is exactly in line with the left, outfeed side fence.

7. **Add holddowns** on both infeed and outfeed fences and adjust them to allow right to left movement of the board.

8. **Add support roller stands** at both sides for handling long boards.

9. **Apply smooth even pressure** to the board during jointing. The board should be kept against both fences. Near the end of the cut, shift pressure so that greater pressure is on the outfeed side of the board.

10. **Regulate the speed** of the joining based on the sound of the cutter. Pushing the board too fast will cause the router to slow and sound like it's laboring. Pushing the work too slowly may cause the bit to burn the workpiece and overheat the bit.

    With experience, you will be able to joint boards, both big and small, comfortably and accurately with your RouterShop.

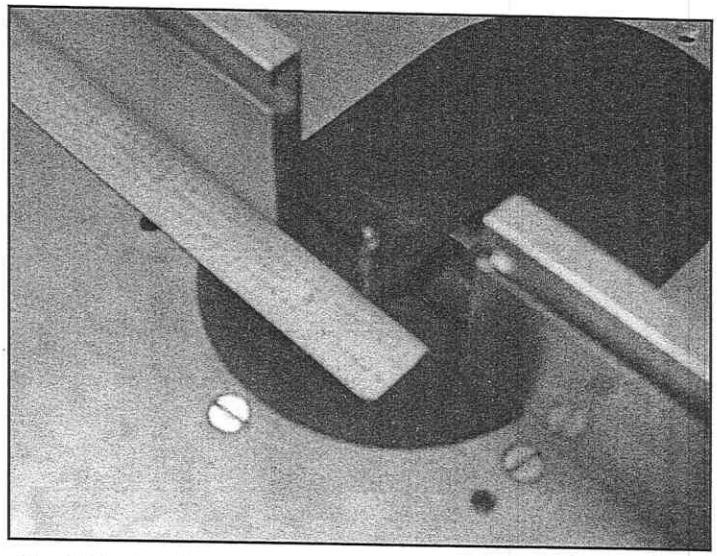


Fig. 35-1: Use the crossfeed adjustment to align the bit's cutter exactly plane with the left hand fence. Rotate the cutter back and forth to ensure that the leading edge just comes in contact with a board that is resting on the left fence.

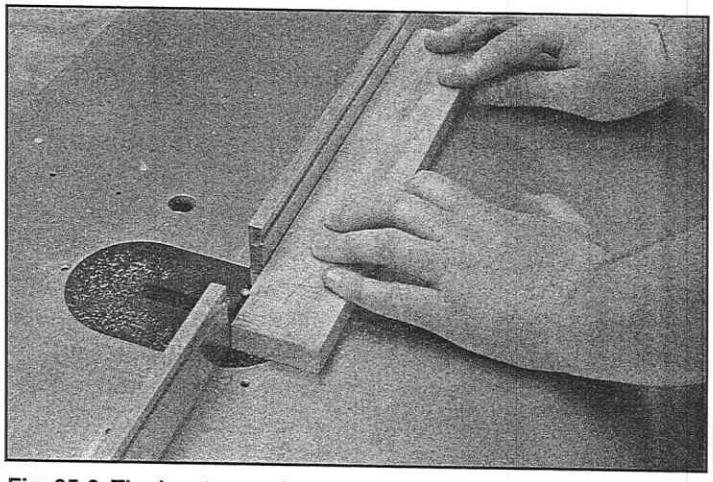
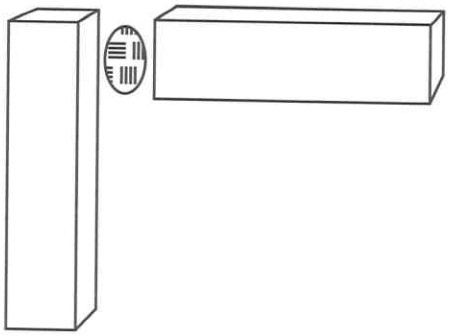


Fig. 35-2: The key to continuously smooth planed edges is a smooth continuous feed and using hold downs on the vertical fence to keep the board flat on the table.. On narrow stock, also mount hold downs in the miter gauge track.

Using Your RouterShop™ as a Biscuit Joiner



One of the best recent innovations is the biscuit joint. Here a biscuit made from compressed beech fits into especially cut grooves and adjoining boards can be glued together with tight, aligned and strong joints. And it's done easily with the use of a biscuit joiner. One such joiner is shown cutting the groove in the photo at the right.

Your RouterShop can do these joints, and in some cases better. For instance, the hand unit must be manually kept level in order to position the cut in the right position. Any tilt to the unit will cause slight displacement of the cut — and the boards won't line up. Planing, scraping and sanding would be necessary.

Using your RouterShop, the board is kept flat on the work table, so accurate positioning is very easy. And boards will line up easily with no need on planing, scraping and sanding. That's a big difference. So even if you have a biscuit joiner, you will probably prefer to use the RouterShop from now on.

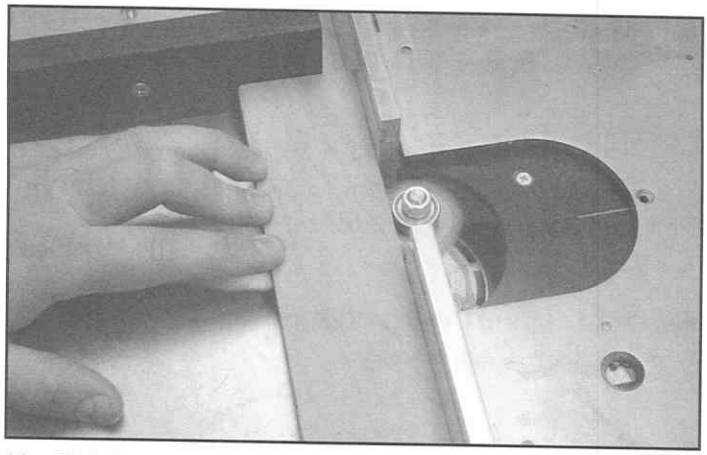


Fig. 36-1: The RouterShop does biscuit joinery easier and better than hand held units.

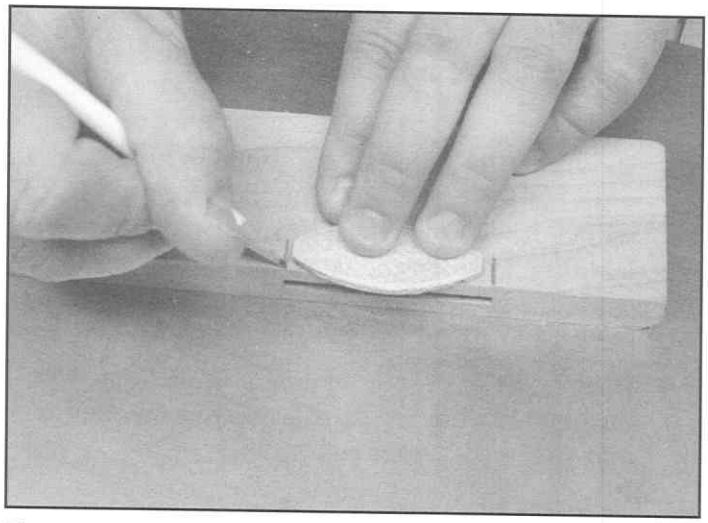


Fig. 36-2: The biscuit location is marked on the underside of the board. Inset, marks are put at the end of each biscuit with an added 1/8" to allow for the fence position.

With hand held units, it can be difficult to keep the unit absolutely level. A small degree of error can give an unacceptable joint.

Set Up the RouterShop as a Biscuit Joiner:

1. **Locate biscuit locations.** To mark the locations, working on the *underside of the boards* place the biscuit to be used at the location and place marks across both boards at each end of the biscuit plus 1/8". Biscuits are usually placed every 5-6 inches along the length of the board. Do this for all biscuits.

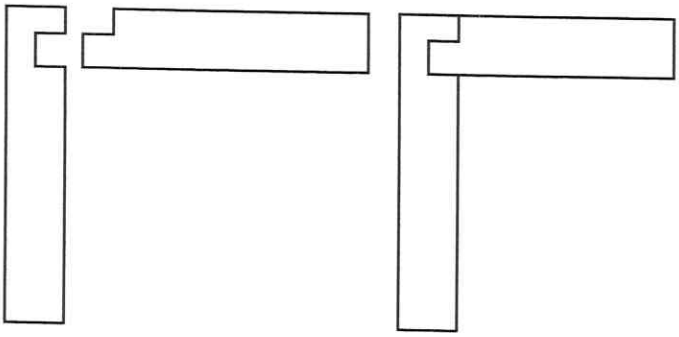
RouterShop
"Quick Notes"

In the RouterShop Operator's Manual, each joint procedure is detailed completely.

These "Quick Notes" are meant to be a summary of the specific formulas for each type joint. There is room for you to make notes and write down specific notations, such as router bit, crossfeed, depth of cut, etc.

It is suggested that you copy these pages before making notations so that these pages remain unmarked and can be used as "masters" for future use.

Corner Dado Joint



Measurements Required:

router bit diameter - *b*

wood thickness - *t*

tenon depth - *d*

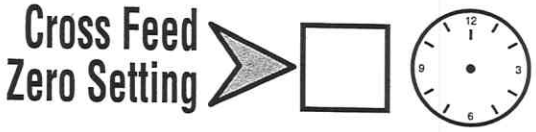
tenon width - *w*

shoulder width - *s*

To cut groove in sides:

ex: board is 1/2" or 8 turns

or 8 turns clockwise of the crossfeed handle

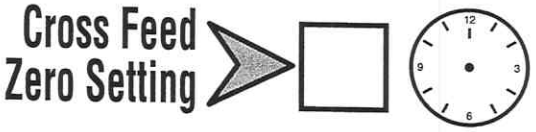


To cut backs and fronts:

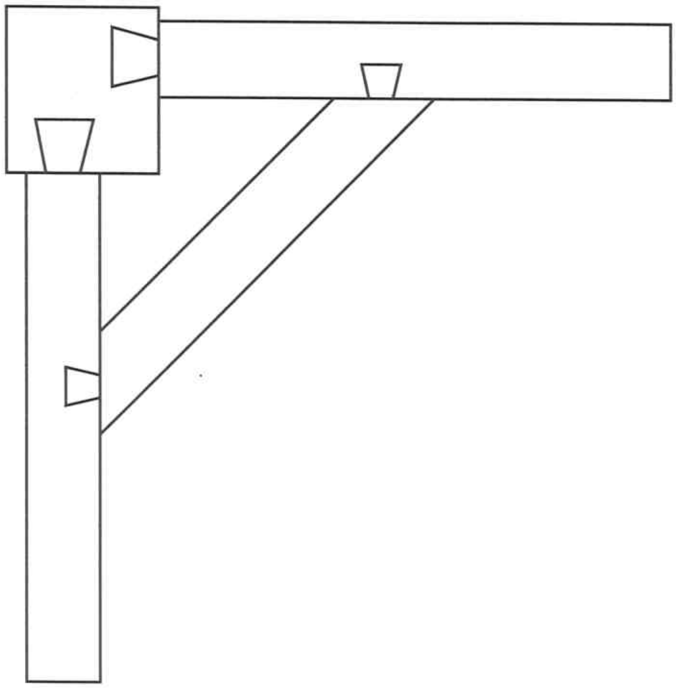
move bit 2 times diameter (b) in 16ths

ex: 4/16 X 2

or 8 turns clockwise of the crossfeed handle



Locking Dovetail Corner



Make the leg sockets. Follow same procedures as in sliding dovetails.

Make apron pins to fit sockets.

Attach legs and aprons and layout crosspiece brace. Mark centerline where brace intersects apron.

Cut sockets where centerline is marked.

Making the Crosspiece Brace:

Measure the distance between inside of bottom of each socket. Cut the crosspiece brace accordingly.

Make the pins on the crosspiece. Use the same procedures as in making pins for sliding dovetails.

Note: You should make a practice crosspiece and adjust the pins until they are snug and adjust the length of the crosspiece until the joint is rigid and square.

Measurements Required:

router bit diameter - *b*

wood thickness - *t*

tenon depth - *d*

tenon width - *w*

shoulder width - *s*

Cross Feed Zero Setting

Cross Feed Zero Setting

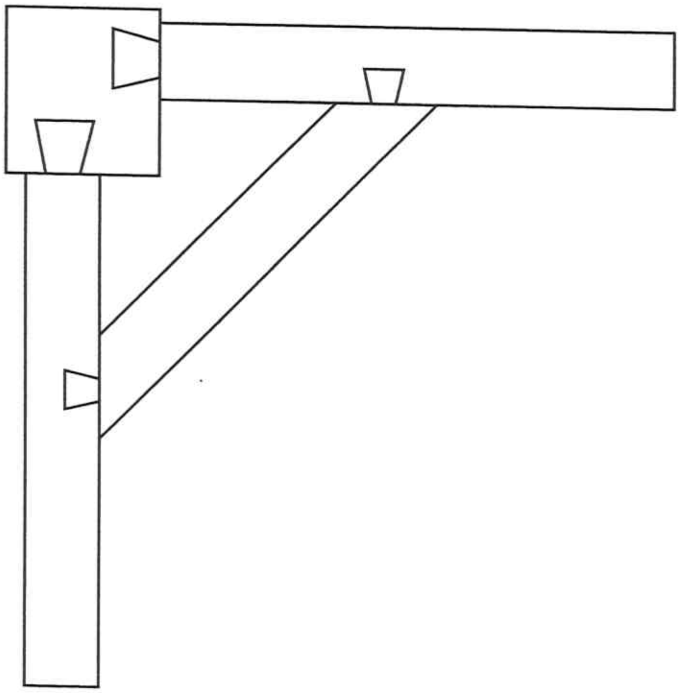
Cross Feed Zero Setting

Cross Feed Zero Setting

Cross Feed Zero Setting

Cross Feed Zero Setting

Locking Dovetail Corner



Make the leg sockets. Follow same procedures as in sliding dovetails.

Make apron pins to fit sockets.

Attach legs and aprons and layout crosspiece brace. Mark centerline where brace intersects apron.

Cut sockets where centerline is marked.

Making the Crosspiece Brace:

Measure the distance between inside of bottom of each socket. Cut the crosspiece brace accordingly.

Make the pins on the crosspiece. Use the same procedures as in making pins for sliding dovetails.

Note: You should make a practice crosspiece and adjust the pins until they are snug and adjust the length of the crosspiece until the joint is rigid and square.

Measurements Required:

- router bit diameter - *b*
- wood thickness - *t*
- tenon depth - *d*
- tenon width - *w*
- shoulder width - *s*

Cross Feed Zero Setting

Cross Feed Zero Setting

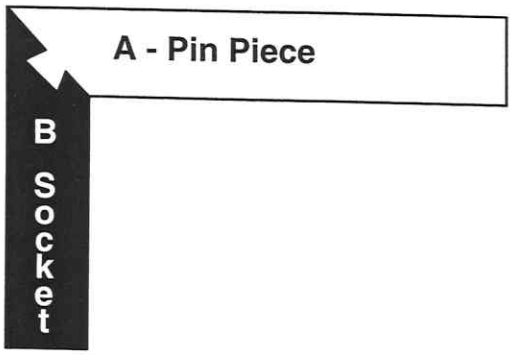
Cross Feed Zero Setting

Cross Feed Zero Setting

Cross Feed Zero Setting

Cross Feed Zero Setting

Bevel Sliding Dovetail



Measurements Required:

router bit diameter - *b*

wood thickness - *t*

tenon depth - *d*

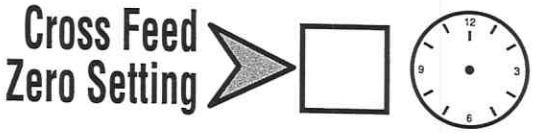
tenon width - *w*

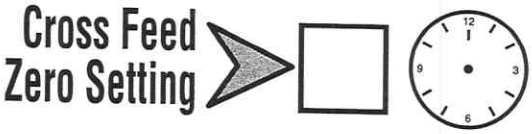
shoulder width - *s*

To move bit to socket cut position:

In most cases the socket should not be in the center of the bevel but closer to 1 /3rd from the inside corner. This will allow-for the pin to be positioned more equally.

Note position of socket, once cut.



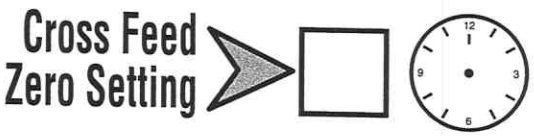


Position bit for lower pin cut:

$$\frac{\text{bit diameter} + \text{entry cut}}{2} + \text{depth of cut}$$

ex: $\frac{4/16" + 3/16"}{2} + 5/16"$

or 8-1/2 turns counterclockwise

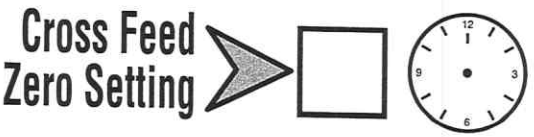


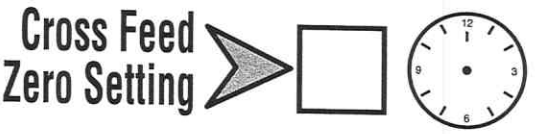
Position bit for upper pin cut.

bit diameter + entry of cut

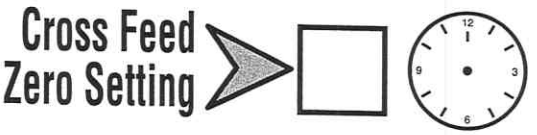
Ex: 4/16" bit + 3/16" = 7/16"

or 7 turns clockwise.

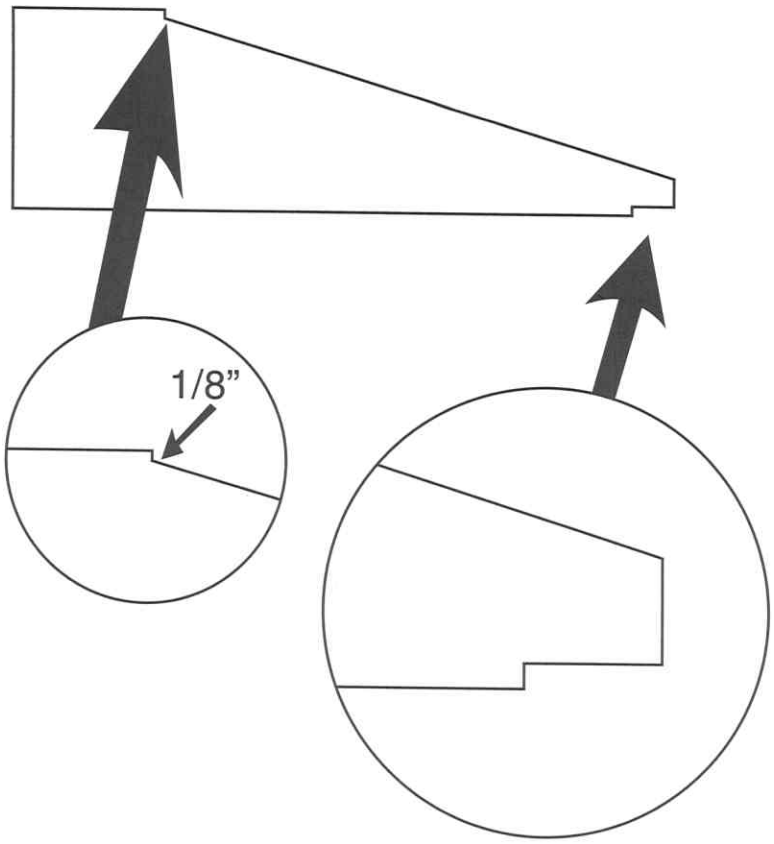


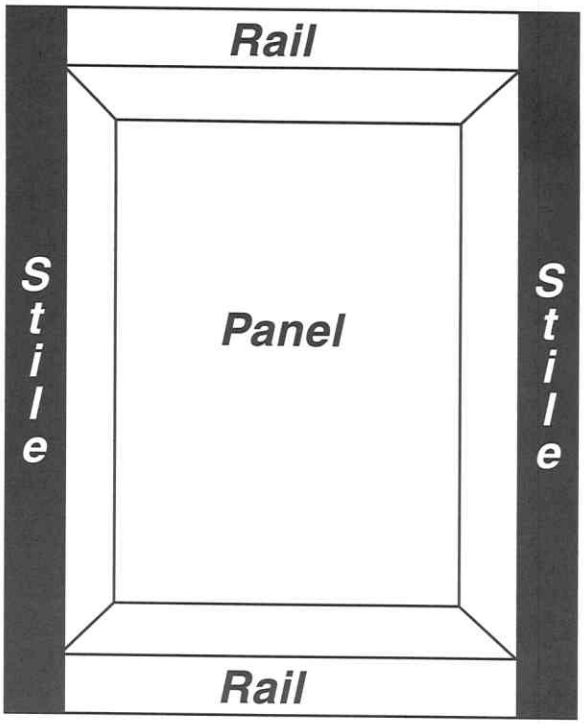


Remove remaining wood by raising bit in increments no greater than bit diameter.



Making the Panel





Measurements Required:

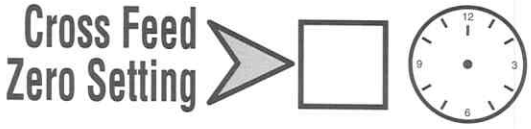
router bit diameter - *b*

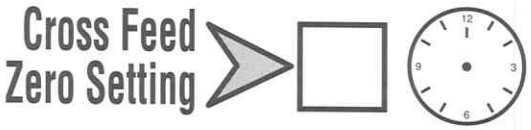
wood thickness - *t*

tenon depth - *d*

tenon width - *w*

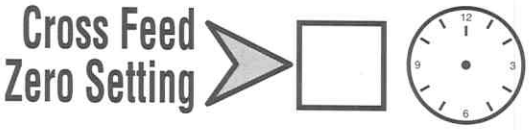
shoulder width - *s*





To position bit for bottom cut:

From "zero" crossfeed point, add 2 turns (1/8") clockwise.



To position bit for panel bevel cut:

1. Tilt table to angle of bevel. *Ex. 70°*
2. Set depth of cut. *Ex. 1 3/8"*
3. Raise bit until it is just clear of panel. Then lower bit 2 turns.;