

INCRA[®]

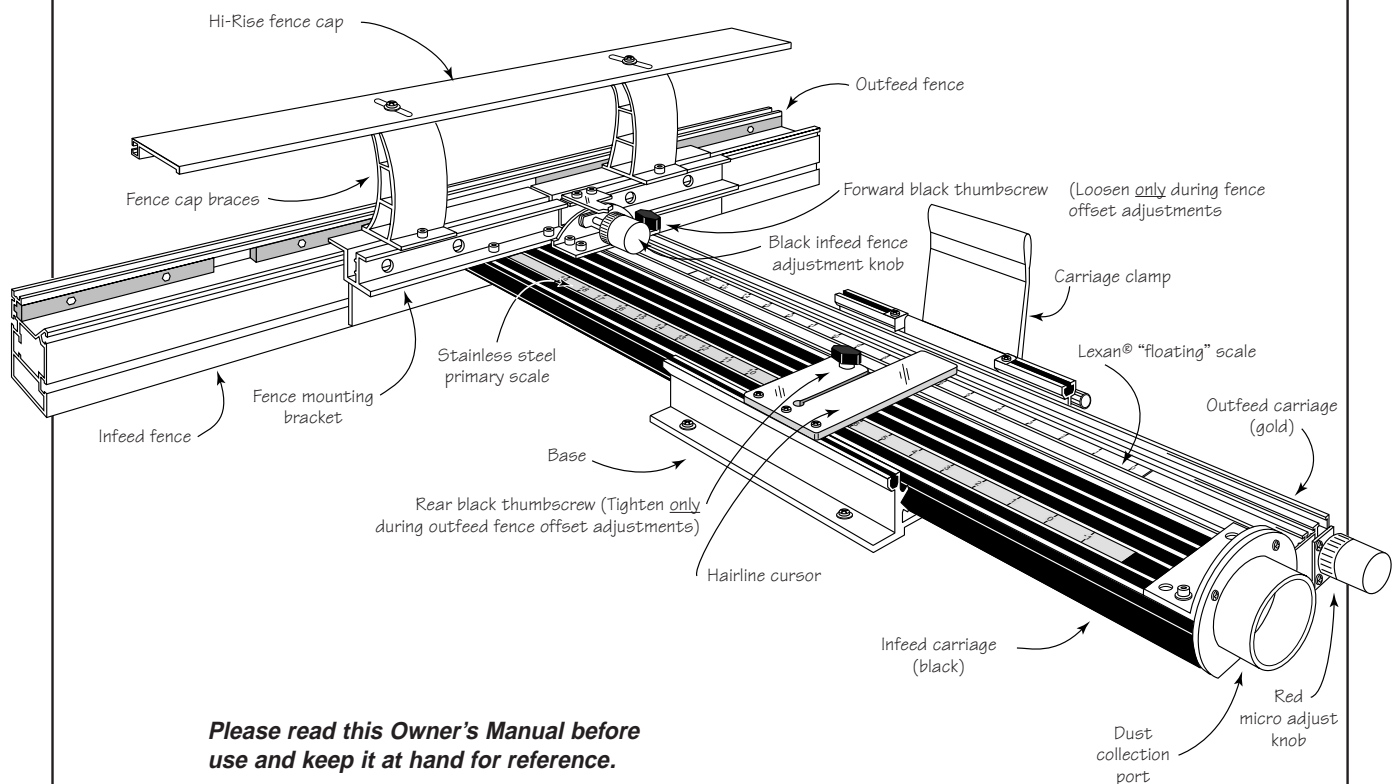
TWIN LINEAR

**Dual Carriage, Dual Split Fence
Universal Woodworking System**

OWNER'S MANUAL

Please take just a few minutes of your time to read your new INCRA TWIN LINEAR owner's manual. You'll find it full of interesting and useful information about safety, setting up, and putting to use the many wonderful features of the TWIN. And it's all written by someone who continues to use every INCRA product from the very first INCRA Jig all the way up to our best offering ever—the INCRA TWIN LINEAR! In eight years of using one INCRA Jig or another virtually every weekend (and some week nights) I've come to know these tools inside out. In writing this manual I want to share this experience with you. I've attempted to make everything as clear as possible, but if you are in doubt, we'll be here to help. See you in the shop!

—Perry



Please read this Owner's Manual before use and keep it at hand for reference.

NOTE

If you are setting up the TWIN at your table saw, follow the mounting instructions included with the TSII Base Mount Kit

CONTENTS



SAFETY 2



TWIN LINEAR SETUP

Accessories	5
Hi-Rise™ Fence Cap	5
Installing the Extender Bar	6
Extender Bar and Stop	6
Incra Stop Assembly	6



OPERATION

Moving to a New Scale Setting	8
Micro Adjusting	9
Offset Adjustment	10
Infeed Fence Adjustment	10
Outfeed Fence Adjustment	11
Gap Adjustment	12
Zero Clearance Subfence	12



IN-LINE FENCE APPLICATIONS

General Purpose Router Fence	14
Vertical Panel Raising	15
Joint Making	15



OFFSET FENCE APPLICATIONS

Jointing	16
Shaping	17



ADJUSTMENTS

Adjusting the Clamping Pressure	18
Realigning Carriage and Fence Racks	19
Realigning Infeed and Outfeed Fences	19
Parts and Optional Accessories	20

SAFETY

Important safety instructions for using the INCRA TWIN LINEAR. Before using, read and follow all of the instructions and safety information in this manual.

- When using the INCRA TWIN LINEAR in conjunction with any other tool, first read and follow all instructions and safety information in that tool's owner's manual.
- Always turn off the power and wait until the bit or blade comes to a complete stop before changing the setting of any part of the INCRA TWIN LINEAR or INCRA Stop.
- Always keep both hands behind the fence when moving the INCRA TWIN LINEAR to a new setting.
- Before making a cut, always make sure that the carriage clamp is fully engaged and the jig is securely locked in place.
- When using the INCRA TWIN LINEAR with other tools, make sure that all safety guards and other safety equipment supplied by the manufacturer of that tool are securely in place and functional. Never let the INCRA TWIN LINEAR interfere with another tool's safety equipment.
- Use appropriate safety devices. Keep hands clear of the bit or blade. Always use a push stick, rubber soled push block, or other safety device to keep your hands safely away from the cutting tool.
- Wear safety glasses, hearing protection, and follow all normal shop safety practices.
- DO NOT modify the INCRA TWIN LINEAR in an attempt to use it with non-INCRA accessories.
- When adjusting the fence opening, never position the infeed or outfeed fence ends closer than 1/8" from the router bit.
- After making adjustments to the fence opening, be sure to tighten the four socket head cap screws that secure the fences to the fence mounting brackets.
- After making any offset adjustments to the fence, always tighten the carriage tie (black clamping knob behind the outfeed fence mounting bracket) and pull the carriage clamp up into the locked position.
- When using fence settings in which the router bit is partially recessed in the fence opening, always insure that the bit is centered within the opening.
- Never let the router bit come into contact with any part of the INCRA TWIN LINEAR, INCRA Stop, or INCRA Right Angle Fixture.
- When using large diameter vertical or horizontal panel raising bits or any other large diameter bit, always follow that router bit manufacturer's operation and safety recommendations.
- Whenever it is necessary to remove large amounts of stock, always use multiple side-by-side passes to achieve the final cut. Several shallow cuts are safer and will yield better results.

TWIN LINEAR SETUP

NOTE

For those of you setting up the TWIN on an "INCRA TWIN ready" router table, the mounting holes will be predrilled with T-nuts installed. Skip to Step 2.

Suggested Router Table Dimensions

If you don't already own a router table, **Fig. 1** gives minimum dimensions for a table top designed around the TWIN and its capabilities. If you have a router table top that is not long enough to handle the full range of the TWIN, see the Tip at right for an easy way to extend your table dimensions.

1 Drill Mounting Holes

Begin by drilling the (8) mounting holes in your router table top. A paper pattern is provided to make locating the holes easy. Draw a line extending from the center of the hole in your router table toward the far edge of the table, **Fig. 2**. This line needs to be parallel to the edges of the table so take a few measurements at each end of the line to make sure it is. Position the dark line on the pattern right on top of the line you draw. Slide the pattern back until the marked edge is 22" from the center of the hole in your table. Tape the pattern in place.

NOTE

Placing the pattern 22" away from the center of the hole will allow you the maximum usable range of the TWIN. Moving the pattern closer to the hole on smaller tables does not limit the full use of the many features of the TWIN, it only decreases the distance that the fence can be moved from the cutter later on.

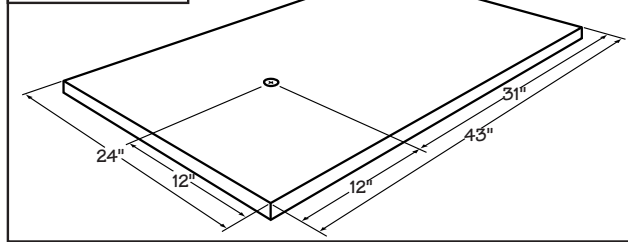
The base mount hardware pack gives you a couple of fastener options. You can mount the base with (8) 10 x 7/8" wood screws with washers, in which case you'll want to predrill the (8) holes with a 1/8" drill bit. Or you can use the (8) 10-24 x 1 3/4" phillips pan head machine screws and predrill the (8) holes with a 1/4" bit. I prefer the machine screws, but if you choose this option, make sure you have clearance under the table for the washers and nuts at all eight mounting hole locations.

2 Attach Base to Router Table

Slide the carriage out of the base. Depending on which fastener option you selected in Step 1, attach the TWIN's base to your router table. Put a washer on the screw first and make sure you place a screw in each of the eight slotted holes in the base, **Fig. 3**, on the next page. If you are using the machine screws, place a washer and hex nut on the screw from under the router table. Tighten all (8) mounting screws.

Fig. 1

Suggested router table dimensions



TIP

Extending your router table length

Screw aluminum or steel angle to underside of router table to provide support for table extension. The extension needs to be flush and parallel to the table top. Shim to alignment as necessary.

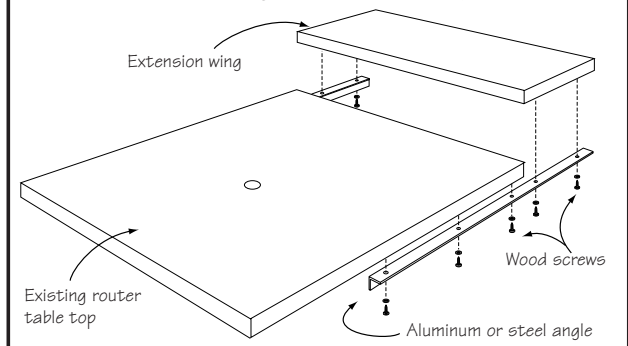
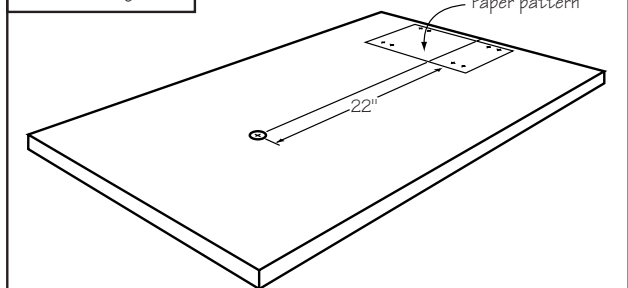


Fig. 2

Drill mounting holes



Drill 1/4" holes if you want to use the 10-24 x 1 3/4" machine screws and hex nuts.

Drill 1/8" holes if you want to use the 10 x 7/8" wood screws.

FACT

Infeed and Outfeed

Infeed refers to everything that is before the cutter, while **outfeed** is everything that is after the cutter. You'll hear about infeed and outfeed fences, of course, but you also have an infeed and outfeed side to your router table, and you'll learn how to set an infeed or outfeed

stop later in this manual. Your INCRA TWIN LINEAR is the only fence of its kind to offer separate infeed (black) and outfeed (gold) carriages, each controlling its own fence. The "twin" carriages can operate in tandem, or independently for offset fence applications.

3 Attach Outfeed Fence

Before you slide the carriage back into the base, take a look at the black thumbscrew that passes through the clear acrylic hairline cursor on the base. **Fig. 3.** The thumbscrew is screwed into a rectangular nut. Make sure that the rectangular nut slides into the T-slot in the top of the infeed carriage when you slide the carriage back into the base. Now slide the carriage into the base and position the front of the fence directly over the hole in your table top. Pull the carriage clamp handle up into the locked position.

Using the supplied hex head tool, loosen the (4) socket head cap screws about a half a turn through the access holes in the rear of the fence mounting bracket. See **Fig. 4.** Place the remaining fence half end-to-end with the half already mounted and slide them both (as though they were one continuous fence) until the notch at the front of the fence is aligned directly over the hole in your router table. Retighten the (4) socket head screws.

4 Initial Alignment for Primary Scale

With the carriage clamp locked in place, slide the primary (stainless steel) scale to position the nearest scale mark directly under the hairline cursor. The scale is held in place by a magnetic strip. Lifting one end of the scale off of the magnet will decrease the tension, allowing the scale to slide more easily. Slide the Lexan plastic scale to position the nearest scale mark under the cursor as well. You will change the scale positions the first time you install a bit or blade and “zero” to the cutter, but remember this: Since the INCRA TWIN will only clamp every $1/32$ ”, you must always make sure the carriage clamp is locked before positioning any of the scales or joinery templates. If the clamp is unlocked when the scales are positioned, it almost guarantees inaccurate cut placement.

5 Install Dust Collection Port

Place washers on (2) $1/4$ -20 X $3/8$ ” socket head cap screws and place them through the holes as shown in **Fig. 5.** Loosely attach (2) $1/4$ -20 rectangular nuts, then slide the nuts into the T-slots on the top of the infeed (black) carriage. Slide the port assembly forward until it stops, then tighten the fasteners. Should you ever want to remove the carriage from the base again, you must first remove the port by loosening these same fasteners. The dust collection port accepts a $2\frac{1}{2}$ ” diameter hose.

Fig. 5

Install dust collection port

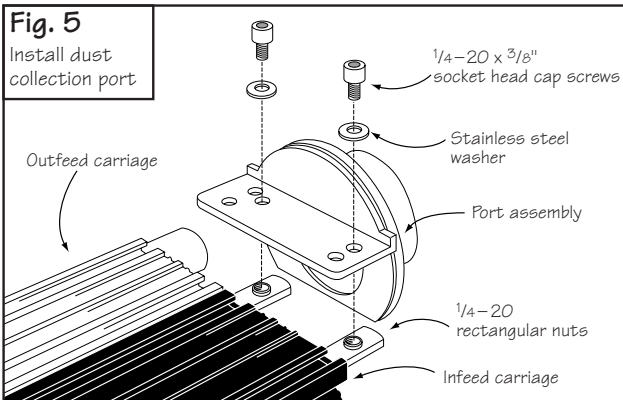
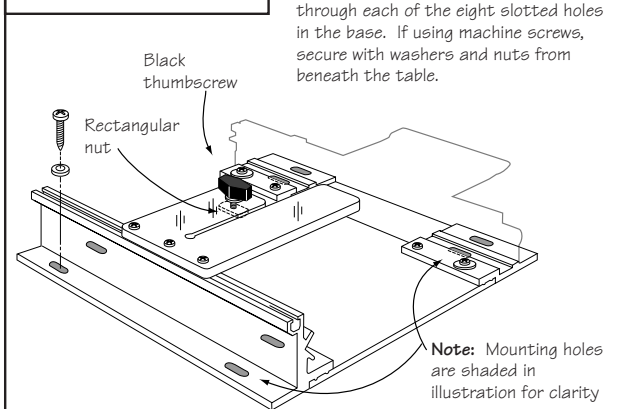


Fig. 3

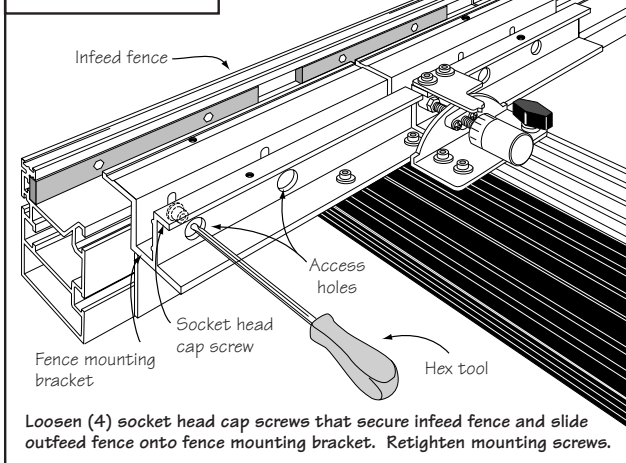
Attach base to router table



Place mounting screw with washer through each of the eight slotted holes in the base. If using machine screws, secure with washers and nuts from beneath the table.

Fig. 4

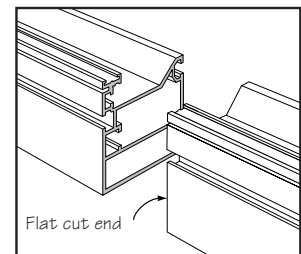
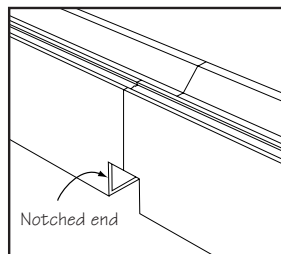
Attach outfeed fence



Loosen (4) socket head cap screws that secure infeed fence and slide outfeed fence onto fence mounting bracket. Retighten mounting screws.

TIP

Take a look at the TWIN's fence. At one end of each fence half you'll find a flat cut, while on the other end you'll notice a small notch. Place the two notched ends together whenever you want a continuous fence surface above the cut area. You'll find this especially useful when using the Right Angle Fixture for joinery, since it tracks along the top surface of the fence. Placing the two flat cut ends together is perfect when you want to open or close the gap between the fences for large or small diameter cutters.



ACCESSORIES

Hi-Rise Fence Cap

Locate the (2) fence cap braces over the threaded holes on top of the fence mounting bracket and attach with the $1/4-20 \times 3/8$ " socket head cap screws and washers from the Hi-Rise hardware packet. Using the (2) $10-32 \times 1/2$ " phillips pan head screws, nylon washers, and $10-32$ hex nuts, attach the fence cap to the two braces as shown in **Fig. 6**. The slotted holes in the fence cap should be aligned to provide access to the front brace mounting screws. Use a straightedge to align the leading edge of the fence cap with the front face of the infeed and outfeed fences and tighten the two cap mounting screws, **Fig. 7**. Though designed for permanent residence on your INCRA TWIN, you may prefer to take it off, since it is not needed for most of the things you'll do with the TWIN. Just remove the (4) socket head cap screws and store the Hi-Rise assembly for future use. Place the fasteners back in the threaded holes and tighten.

Fig. 6
Attach Hi-Rise fence cap

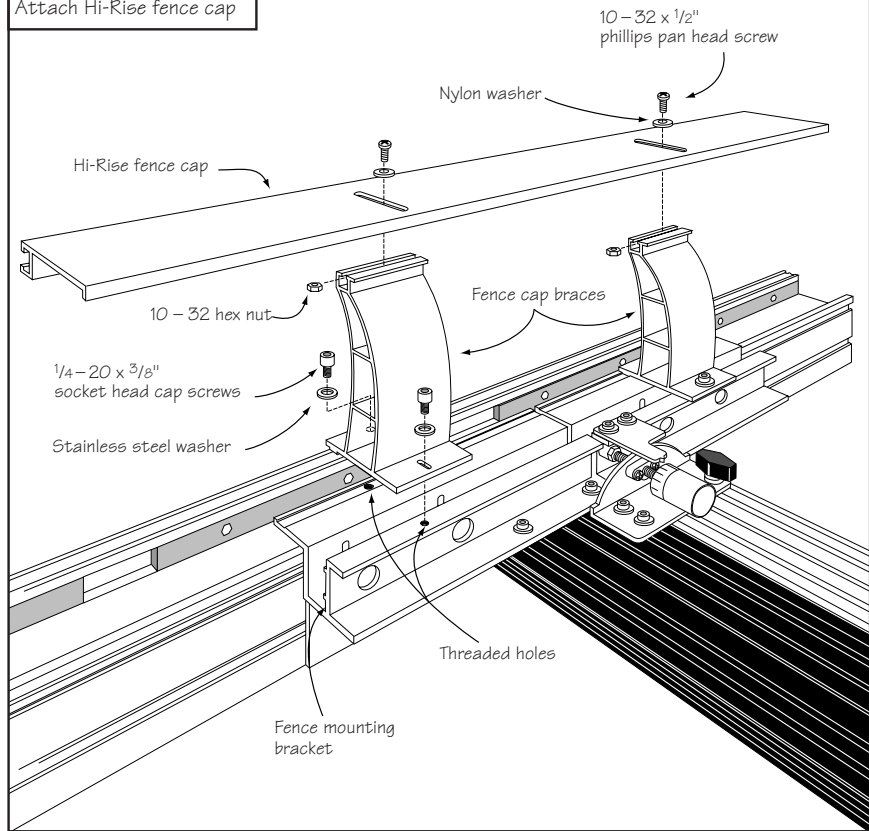
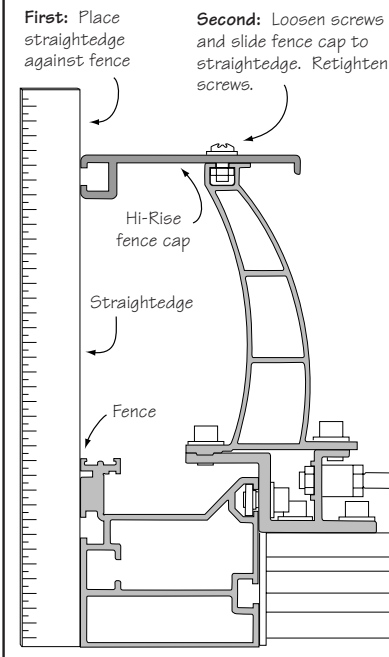
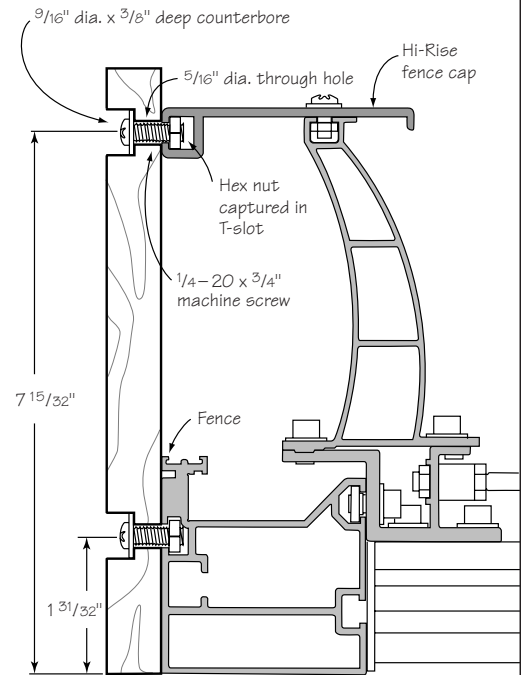


Fig. 7
Align fence cap with fence



TIP

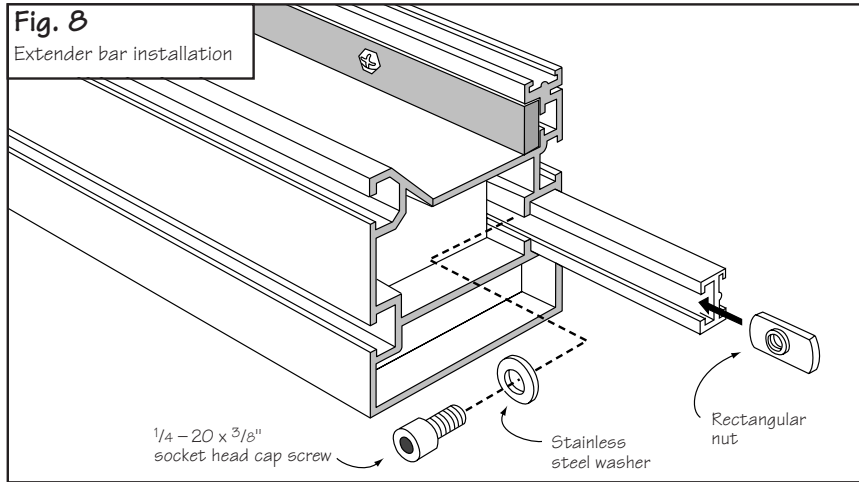
The fence and Hi-Rise fence cap provide the low and high support necessary for large vertical panel work. If you want to add an auxiliary fence to bridge the gap between the two, use the drill and counterbore dimensions shown in the illustration. Use $1/4-20 \times 3/4$ " machine screws with washers and hex nuts to attach the auxiliary fence.



Installing Extender Bar

Here's another accessory you'll find useful from time to time. The extender bar will allow you to set its sliding stop up to 16" beyond the end of either the infeed or outfeed fence. **Fig. 8** shows the proper placement for the extender bar. Insert the extender bar with the scale facing forward and lock in place with the 1/4 - 20 X 3/8" socket head cap screw, stainless steel washer, and rectangular nut as shown.

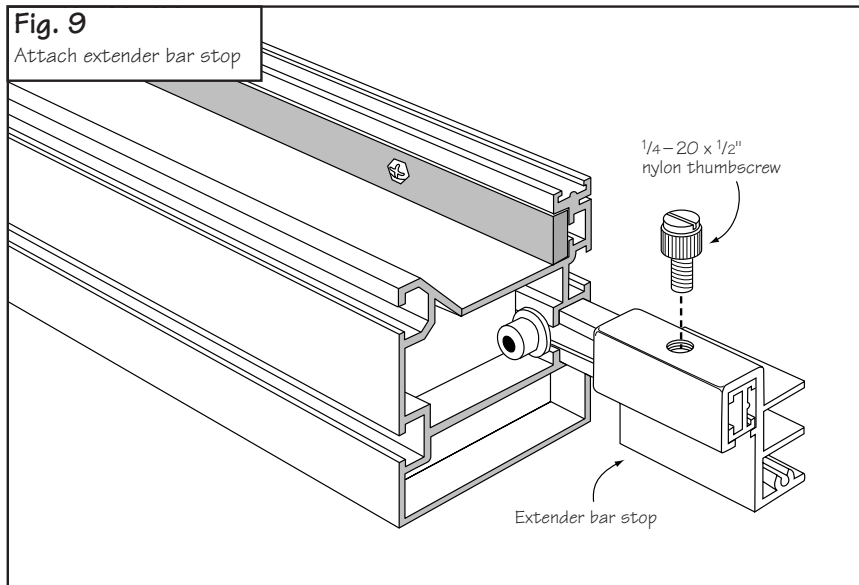
A second stop extender bar can be purchased should you want to increase the stop range beyond both ends of your fence.



Extender Bar and Stop

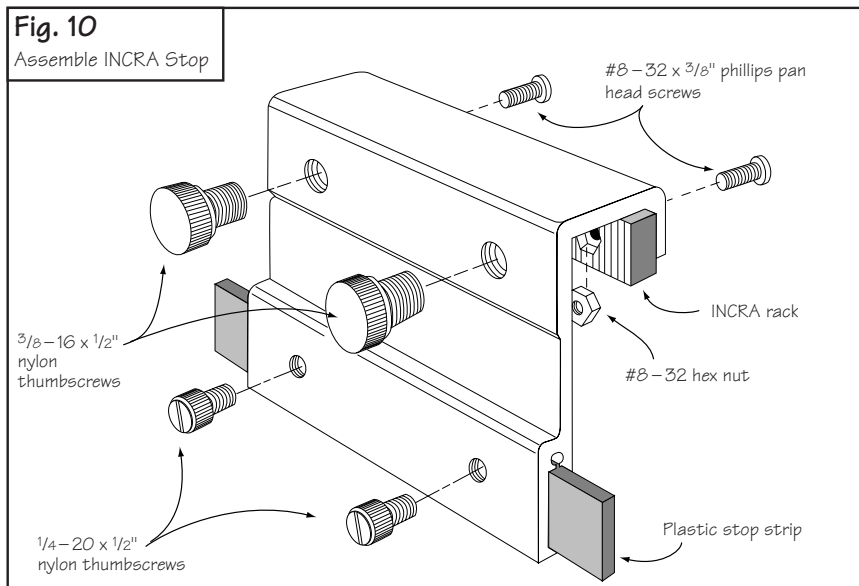
Position the extender bar about 2" beyond the fence end and using the supplied 1/4"-20 X 1/2" nylon thumbscrew, attach the extender bar stop. See **Fig 9**. The stop can be used on either end of the extender bar to increase your stop range beyond the ends of the fence. When not in use, the stop can be turned around and locked to the extender bar. This storage position places the stop out of the way, leaving the front face of the fence uninterrupted for through cut operations.

CAUTION: Never allow the opposite end of the extender bar to protrude into the cut area.



Incra Stop Assembly

Using the (2) 8-32 x 3/8" phillips pan head screws and 8-32 hex nuts, fasten the 4" long blue INCRA rack to the INCRA Stop and tighten the screws. Slide the 3/4" x 5" plastic strip into the slot in the stop and secure with two 1/4"-20 x 1/2" nylon thumbscrews. Thread the (2) 3/8"-16 x 1/2" nylon thumbscrews into the INCRA Stop. **Fig.10**. One or both of these thumbscrews can be used to clamp the INCRA Stop to the fence. In use, the plastic strip provides a non-metallic stop surface which can be shaped for special stop setups and can be micro adjusted by loosening the smaller thumbscrews.

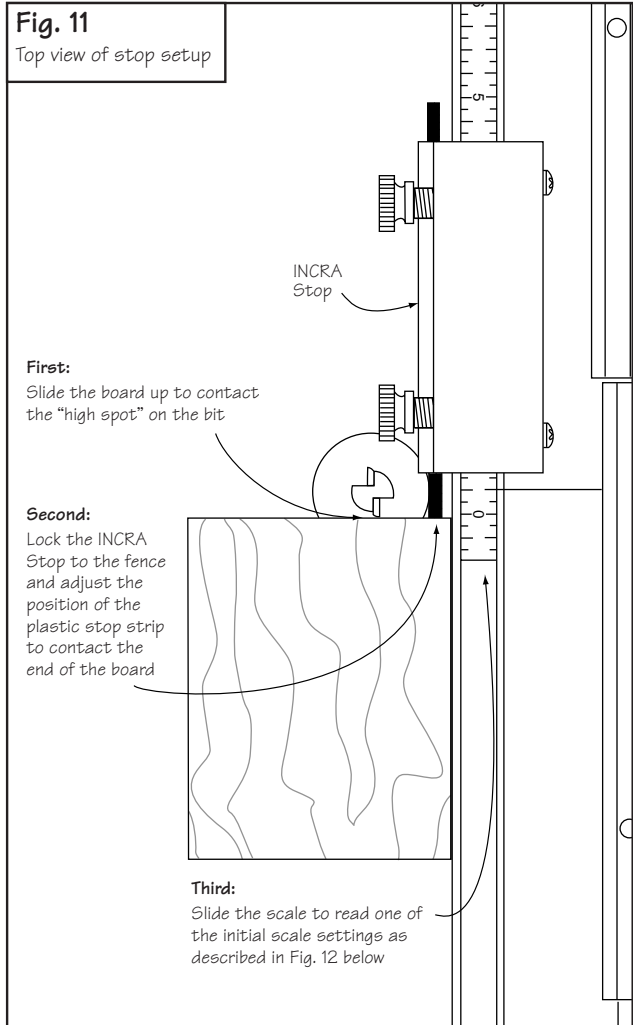
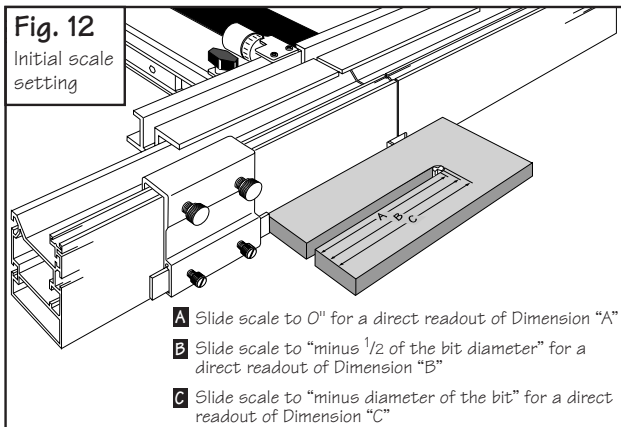


Zeroing INCRA Stop to the End of a Board

For most applications, you will be using your INCRA Stop on the outfeed end of the INCRA Fence to control the length of a cut relative to the front end of the board. Here is how to set the initial scale position for this type of setup:

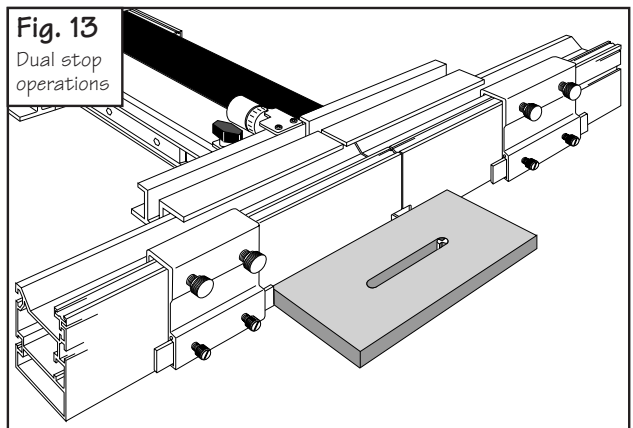
- 1** After installing the bit you wish to use, set the fence to bit distance at about 1". Place a square cut piece of scrap stock against the fence with the end of the board against the infeed side of the bit. Turn the bit to find the high spot.
- 2** Next, lock the INCRA Stop to the fence on the outfeed side of the bit with the plastic stop strip as close as possible to the end of the board. Adjust the position of the stop strip until both the strip and the bit contact the end of the board. **Fig. 11.**
- 3** You now have the choice of setting the sliding scale to one of three initial positions:
 - A** In most cases, you will simply slide the scale to align the 0" mark on the scale with the end of the INCRA Stop nearest the bit. When set to this initial position, the scale reading at any subsequent INCRA Stop location will give you a direct readout of the total length of the cut. (See Dimension "A", **Fig. 12.**)
 - B** If you wish the subsequent scale readings to reflect the distance from the front end of the board to the center of the cut (Dimension "B", **Fig. 12**), slide the scale to an initial reading under the end of the INCRA Stop equal to minus one half of the bit diameter. *Example:* If you are using a 1/2" diameter bit, complete Steps 1 and 2 above then slide the scale to read negative 1/4".
 - C** If you want the scale reading for future INCRA Stop positions to reflect the distance between the end of the board and the outfeed edge of the cutter (Dimension "C", **Fig. 12**), then slide the scale to an initial reading equal to minus the bit diameter.

IMPORTANT: Some stop setups may require that some portion of the fence scale be slid from the outfeed fence into the infeed fence or visa versa. DO NOT offset the fence halves with a scale in this position, as it may damage the scale.



Dual INCRA Stop Operations

Using the same setup process described above and a second INCRA Stop, you will find the precise positioning of mortises on a board quite simple. The *INCRA Jig Projects and Techniques Book* covers this technique fully and includes several unique projects which feature dual INCRA Stop operations. See **Fig. 13.**



OPERATION

Moving to a New Scale Setting

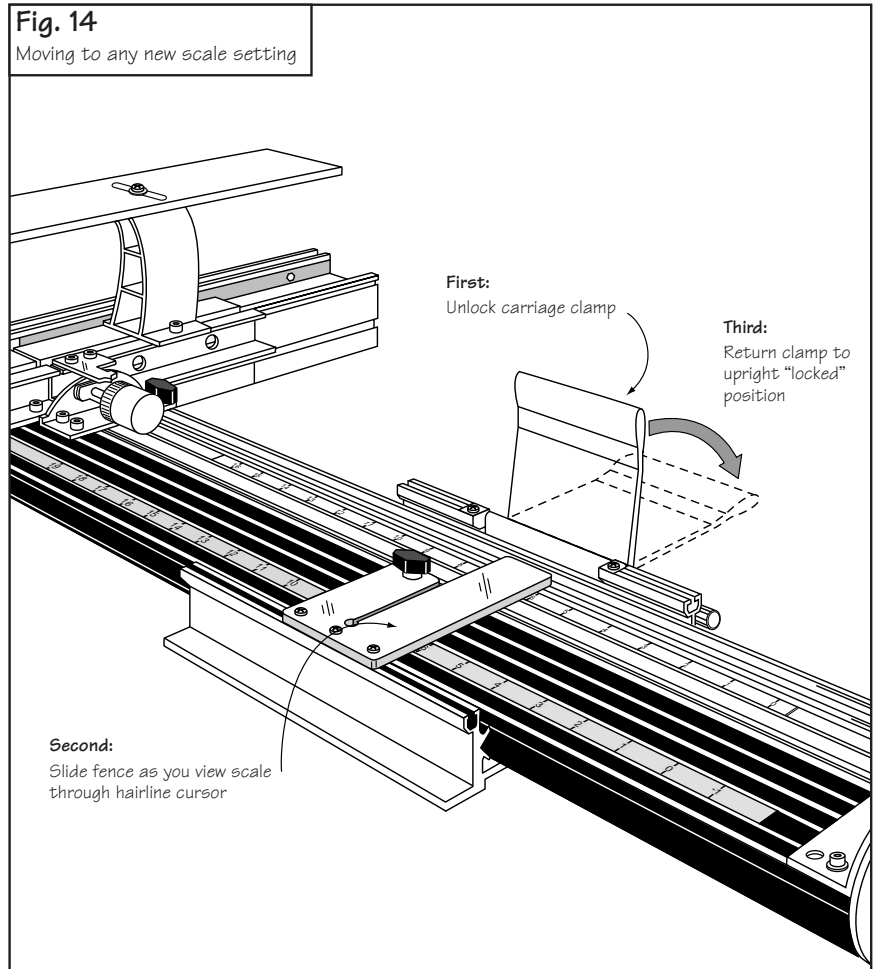
Moving the fence to any new scale setting is just as easy as moving any other fence you've used before. Push the carriage clamp down to unlock the carriage, then slide the fence as you sight through the hairline cursor. When you see your measurement under the hairline, pull the clamp back up to the locked position, **Fig. 14**. Remember that the INCRA TWIN will only clamp every $1/32$ ", so don't try to clamp in between scale marks. It just won't work!

CAUTION: For your safety, keep your hands behind the fence when moving to any new scale position.

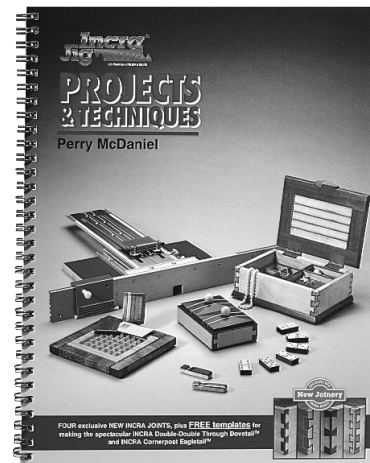
TIP

Although the clamping pressure has been factory adjusted, you may wish to fine-tune the pressure to suit your individual needs. If so, use the thin plastic shims provided and follow the instructions shown on page 18.

Fig. 14
Moving to any new scale setting



For more information on using INCRA tools on the router table, table saw and drill press, pick up the *INCRA JIG Projects and Techniques*, available from your local INCRA dealer. This 148 page book contains detailed plans with over 400 illustrations and photos to build 14 of Perry McDaniel's intriguing projects.



Micro Adjusting

The micro adjust feature of your INCRA TWIN allows for precise positioning of the fence to any location between the $\frac{1}{32}$ " tooth spacing of the INCRA sawtoothed racks. You'll find this feature extremely handy the next time you need to widen a mortise by a hair for a great fitting mortise and tenon joint. Use the micro adjuster for a flawless fit when cutting grooves to accept inlay strips or to loosen up a tight-fitting box joint cut with an undersized bit. You'll find it especially useful for setup operations like "zeroing" or "centering". Here's a step-by-step look at operating your INCRA TWIN's micro adjuster. See Fig. 15 as you follow the steps.

1 Pivot flip clip into position under carriage clamp

Micro adjustments are always made with the carriage clamp halfway between clamped and unclamped. The spring-loaded flip clip will hold the carriage clamp in this half-clamped micro adjust mode position. Use your right hand to quickly pivot it in or out as necessary.

2 Unlock the carriage clamp

With the flip clip in place, the carriage clamp will automatically spring to the micro adjust mode.

3 Micro adjust the fence position

Rotate the knob with the red dial located at the rear end of the outfeed (gold) carriage. Turn the micro adjust knob clockwise to move the fence toward the cutter, or counterclockwise to move the fence away from the cutter.

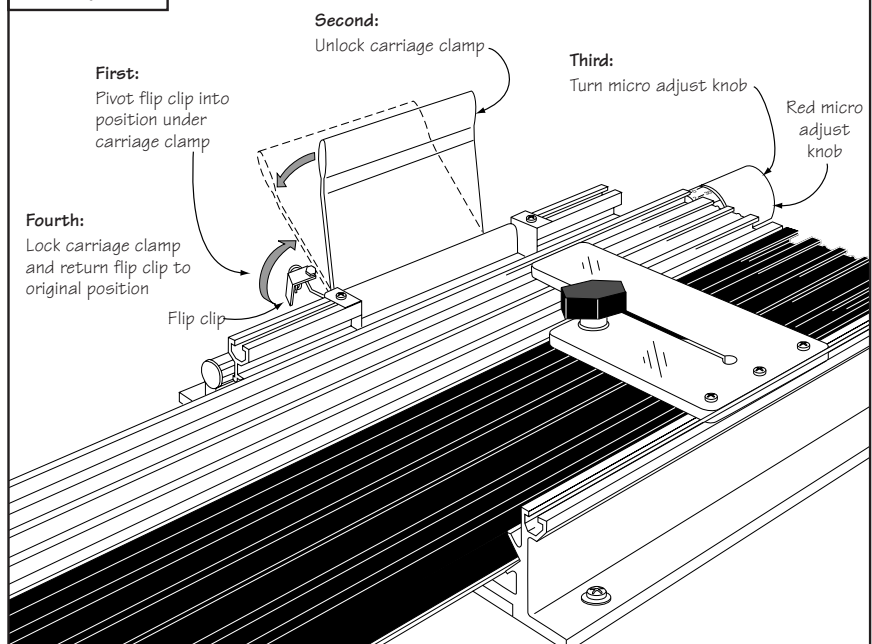
4 Lock the carriage clamp

Pull the carriage clamp up to the carriage in place, then pivot the flip clip back to its original position.

Gauging the distance moved when micro adjusting is easy. A full turn of the knob equals $\frac{1}{32}$ " of movement, a half turn equals $\frac{1}{64}$ ". For smaller adjustments, the red dial is marked in $\frac{1}{1000}$ " increments. After micro adjusting you can re-zero the dial to the pointer by rotating the dial (not the knob) with your fingers. See Fig. 16.

The micro adjust feature of the INCRA TWIN has an adjustment range of $\pm\frac{1}{4}$ " from mid-range. The range scale decal on the carriage shows how much range remains in either direction. To read the scale, just sight along the end of the gold bar that overlaps the decal. Fig. 16.

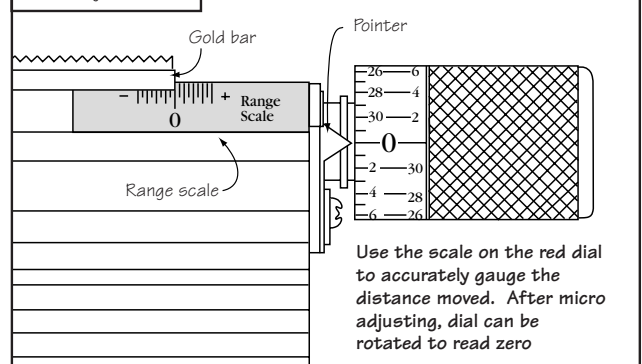
Fig. 15
Micro adjusting



NOTE

Do not continue to turn the micro adjust knob counterclockwise beyond the minus $\frac{1}{4}$ " range shown on the decal. If the knob is unscrewed beyond this point, factory reinstallation may be required.

Fig. 16
Micro-adjust scale



Use the scale on the red dial to accurately gauge the distance moved. After micro adjusting, dial can be rotated to read zero.

TIP

To avoid running out of micro adjustment range in the middle of a project, you want to remember two things: First, always micro adjust back to mid-range before beginning a new project. Second, whenever you need to micro adjust a distance greater than $\frac{1}{32}$ ", use the INCRA positioning racks to get as close as possible before reaching for the micro adjust knob.

Offset Adjustment

The infeed and outfeed fences of your INGRA TWIN can be moved independently in two directions to provide a variety of setup configurations. By making the offset adjustments described below, you can position the fences "in-line" for standard cutting operations such as grooving, rabbeting, and joint-making. You can "offset" the infeed and outfeed fences for specialty cutting applications such as shaping or jointing an edge.

Infeed Fence Adjustment

Though the INGRA TWIN design provides for both infeed and outfeed fence adjustments, the infeed fence adjustment is by far the more important of the two. In fact, all offset fence operations can be set by adjusting only the infeed fence and, since it is the easier of the two adjustments, this is the adjustment you should memorize. See Fig. 17 as you read through the steps.

1 Pivot flip clip into micro adjust position

2 Unlock the carriage clamp

With the flip clip in place, the carriage clamp will automatically spring to the micro adjust mode.

3 Loosen the forward black thumbscrew

The thumbscrew is located at the forward end of the outfeed (gold) carriage. It serves as a lock between the infeed and outfeed carriages and must always be loosened to make an offset adjustment. Loosen the thumbscrew about $1/2$ turn.

4 Micro adjust the infeed fence position

Rotate the knob with the black dial (located at the forward end of the carriage) Turn the knob clockwise to move the infeed fence backward. Once again, the knob is calibrated so that one full turn equals $1/32$ " of movement, $1/2$ turn equals $1/64$ " and, for smaller adjustments, the knob is marked in $1/1000$ " increments. To move the infeed fence forward, rotate the knob counterclockwise as you pull forward on the infeed fence. The infeed fence will not move forward by simply turning the knob. You must pull the fence forward as the knob is turned.

TIP

When attaching an infeed zero clearance subfence as described on page 12, you will move the infeed fence backward as much as $3/4$ ". Instead of turning the micro adjust knob, simply slide the fence backward the necessary distance.

5 Tighten the forward black thumbscrew

Tighten the thumbscrew loosened in Step 3. This locks the infeed and outfeed carriages together.

6 Lock the carriage clamp back in place

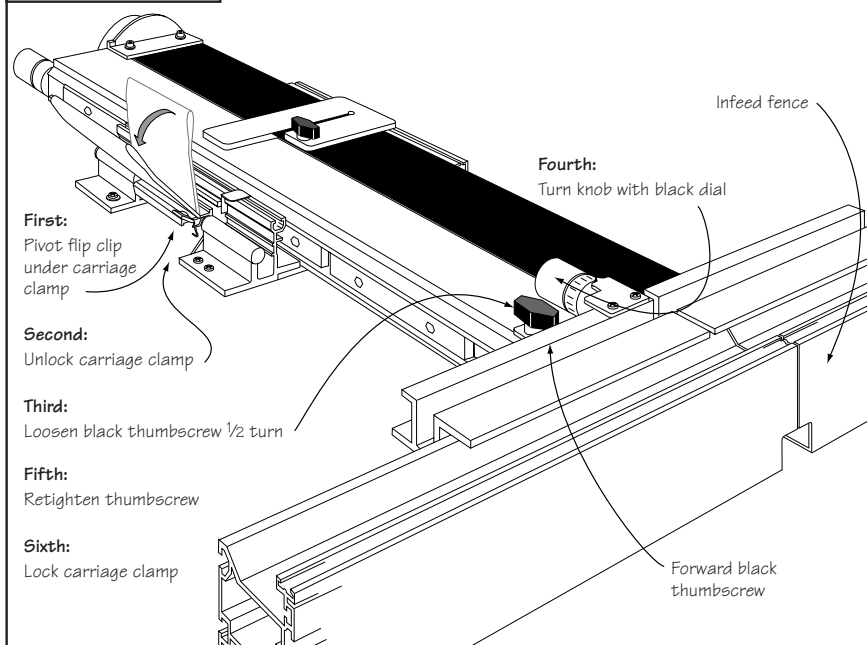
Pull the carriage clamp up to lock the carriage in place, then pivot the flip clip back to its original position.

FACT: Knob with black dial adjusts black carriage

Rotating the knob with the black dial micro adjusts the infeed (black) carriage and its attached fence, not the outfeed fence. Because the knob is located behind the outfeed fence, it may seem like the outfeed fence is moving, but it's not. **Just remember this:** The knob with the black dial adjusts the fence with the black carriage. **Black dial, black carriage.**

Fig. 17

Infeed fence adjustment



Outfeed Fence Adjustment

Most offset fence operations can be accomplished with an infeed fence adjustment, but on occasion you may wish to fine-tune the outfeed fence without altering the infeed fence position. Here's how it is done. See **Fig. 18** as you read the steps.

1 Tighten the rear black thumbscrew

It's located next to the hairline cursor. This thumbscrew locks the position of the infeed carriage.

2 Place carriage clamp in micro adjust mode and loosen forward black thumbscrew

Pivot the flip clip under the carriage clamp and unlock the clamp. Now loosen the black thumbscrew located at the forward end of the outfeed (gold) carriage.

3 Micro adjust the outfeed fence position

Set the red dial on the micro adjust knob located at the rear end of the outfeed (gold) carriage to read zero. Rotate the knob clockwise to move the outfeed fence forward. If you find it necessary to micro adjust the fence backward from the original zero scale reading you must rotate both micro adjust knobs (black and red) counterclockwise by the same amount.

4 Tighten the forward black thumbscrew

Tighten the thumbscrew located at the forward end of the outfeed gold carriage. This locks the infeed and outfeed carriages together.

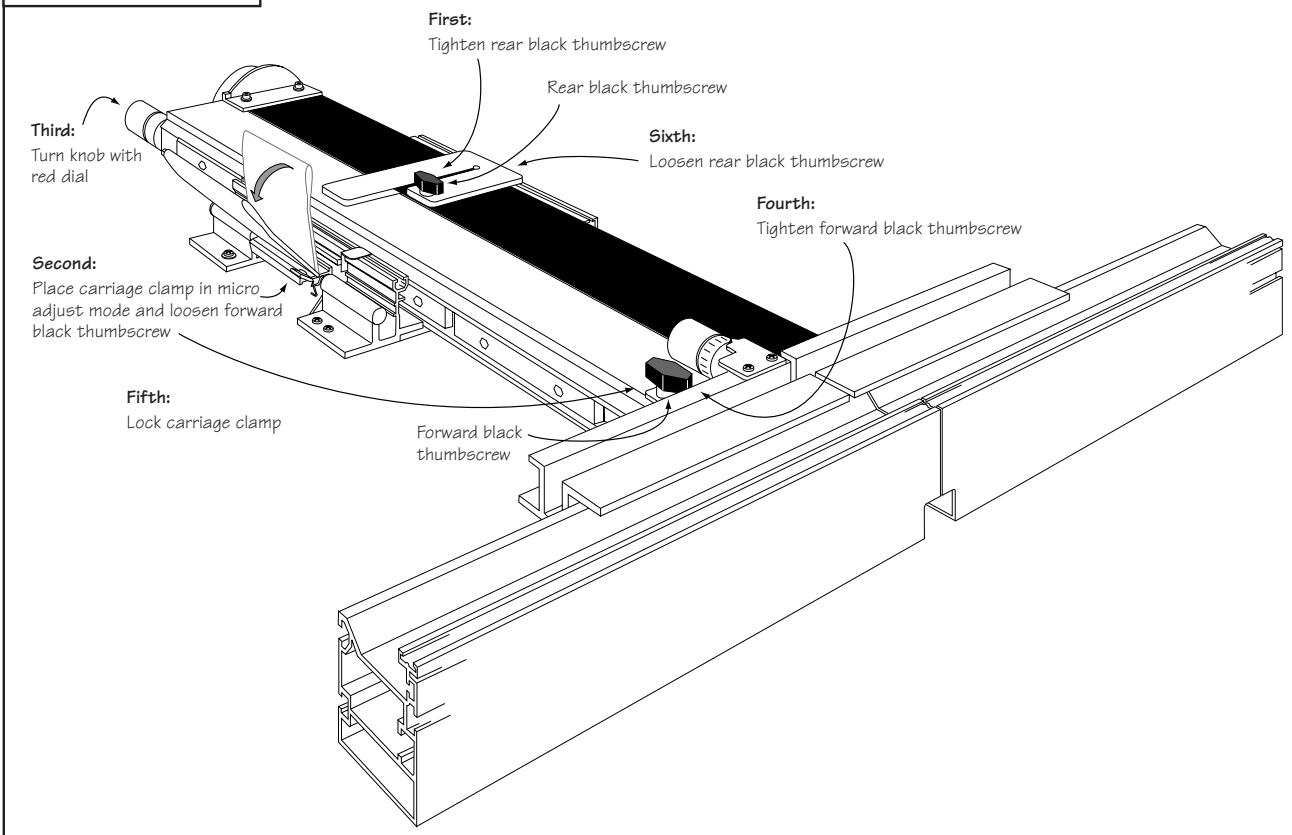
5 Lock the carriage clamp in place

Pull the carriage clamp up to lock the carriage in place and pivot the flip clip back to its original position.

6 Loosen the rear black thumbscrew next to the hairline cursor.

Fig. 18

Outfeed fence adjustment



Gap Adjustment

Follow these steps to adjust the opening between the infeed and outfeed fences (See Fig. 19)

Caution: When adjusting the fence opening or gap, never position the aluminum fence ends closer than 1/8" from the router bit.

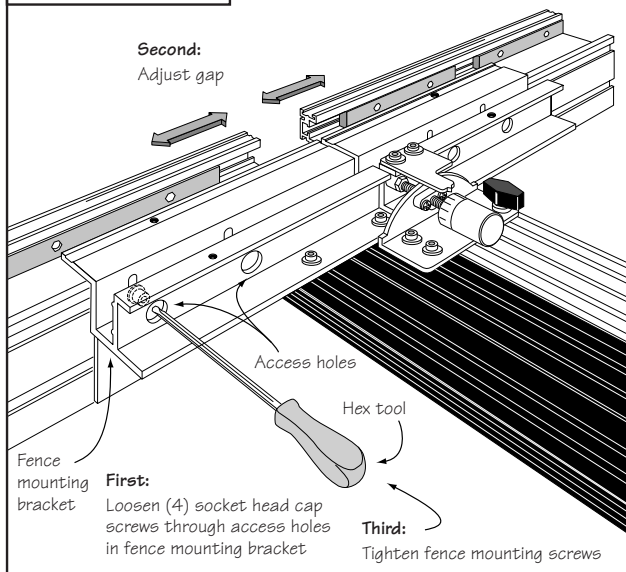
- 1** Using the supplied hex tool, loosen the (4) socket head cap screws that hold the fences to the fence mounting bracket.
- 2** Open or close the fence gap by sliding each fence to the desired position
- 3** Tighten the fence mounting screws

TIP

See Tip on page 4 for fence mounting options to consider when adjusting the gap in the fence.

Fig. 19

Adjusting the fence gap



Zero Clearance Subfence

The large fence offset range offered by the TWIN'S dual carriage design provides an interesting approach to the use of zero clearance subfences. Typically a zero clearance subfence is a long piece of wood with the profile of a particular router bit band sawn into the face. When attached to the router table fence and moved into position the router bit nestles into the cutout. This close fit around the router bit provides both additional support and tearout protection for the boards to be cut. By offsetting the TWIN'S infeed fence an amount equal to the thickness of the subfence you can quickly produce an infeed only subfence that offers perfect tearout control and infeed support. Here's how:

- 1 Prepare subfence blank**
Begin with a smooth flat piece of wood 3/4" thick x 3" wide x 16" long. I prefer medium density fiberboard. It's inexpensive and usually pretty flat. I don't recommend plywood because it splinters too easily. Drill and counterbore the subfence using the dimensions shown in Fig. 21.

- 2 Adjust the fence gap**
Install the cutter in your router and set the fence gap. (see Gap Adjustment section above) so that the fence ends are no closer than 1/8" from the cutter.

- 3 Offset infeed fence**
Move the fence away from the cutter and offset the infeed fence about 3/4" behind the outfeed fence (Fig. 22) on the next page. **Note:** An infeed offset of 3/4" will move the black adjustment knob beyond its working range, so instead of turning the knob as described in Step 4 on page 10, just slide the infeed carriage back by hand.

Fig. 20

Zero clearance subfence on infeed fence

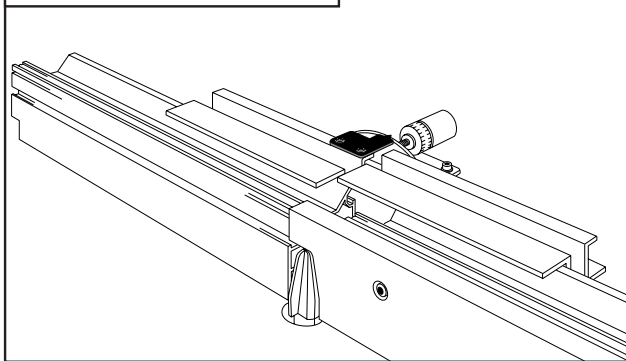
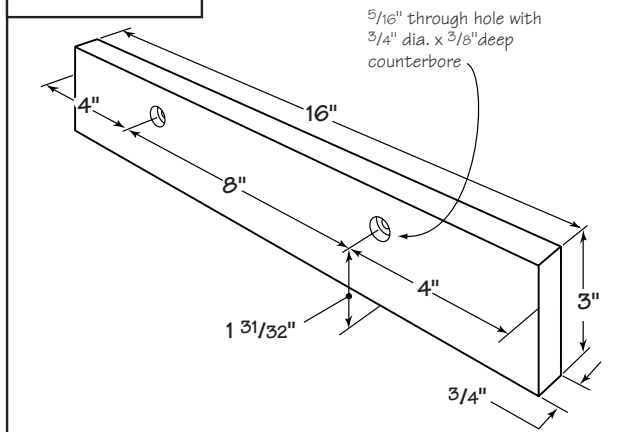


Fig. 21

Subfence dimensions



4 Attach subfence to infeed fence

Place the (2) $1/4$ -20 x $3/4$ " socket head cap screws with washers through the holes in the subfence and loosely attach the $1/4$ -20 rectangular nuts. (Fasteners supplied in the auxiliary fence hardware pack) Slide the subfence onto the infeed fence so the fasteners are captured in the T-slots. Move the subfence forward until stopped by the outfeed fence and tighten the fasteners, **Fig. 23**. Now fine-tune the fence offset so that the subfence is flush with the outfeed fence. Always make sure to tighten the black thumbscrew that ties the two carriages together after making any offset adjustment.

5 Position fence for initial profiling cut

Loosen the mounting screws that secure the subfence about $1/2$ turn and slide the subfence back away from the outfeed fence. Move the TWIN'S fence up to the cutter and position it so the rear face of the subfence is in line with the approximate center of the cutter. See overhead view, **Fig. 24**.

6 Make the profiling cuts

Turn on the router and using a good rubber soled push block advance the subfence forward into the cut. When the subfence touches the outfeed fence, back the subfence out of the cut and turn off the router. Unlock the carriage clamp and move the Twin's fence back about $1/8$ ". Relock the clamp, then repeat the cut. Continue this process until you have cut completely through the subfence.

7 Slide the subfence into final position

Now you can slide the completed subfence into its final position on the infeed fence and tighten the mounting screws. Final positioning should always be done with the router turned off and the carriage clamp locked.

CAUTION: The nature of zero clearance places the subfence very close to the cutter. NEVER attempt to move your fence or make any adjustments to the setup until the router bit has come to a complete stop.

TIP

If you want to add zero clearance to the outfeed fence as well, make two of the subfences as described above. Make the profiling cuts on both pieces from the infeed side. NEVER make the profiling cut by sliding the subfence into the cut from the outfeed side.

When cutting what will later become the outfeed subfence, either drill and counterbore after completing the profiling cuts, or make sure the counterbore faces the infeed fence during the cut. The end of the subfences above the profile will need to be trimmed off so they can close around the cutter.

Fig. 22

Offset infeed fence

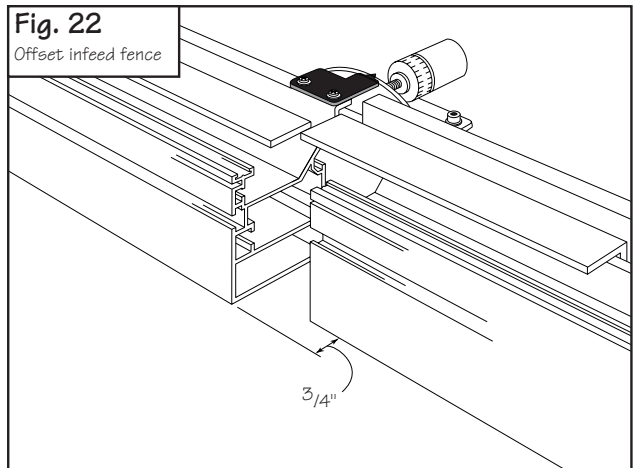


Fig. 23

Attach subfence to infeed fence

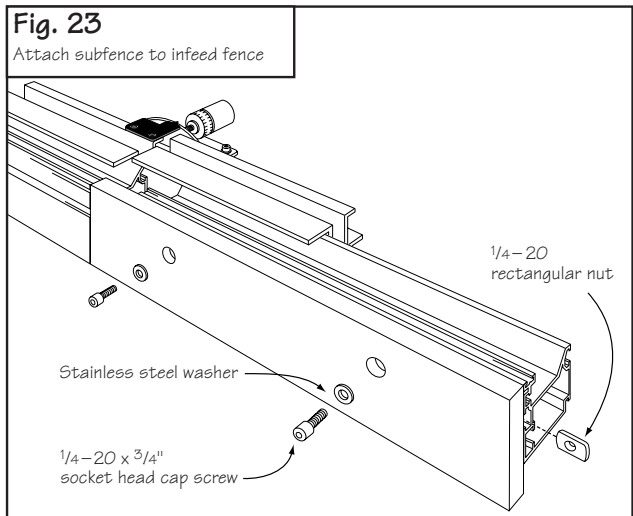
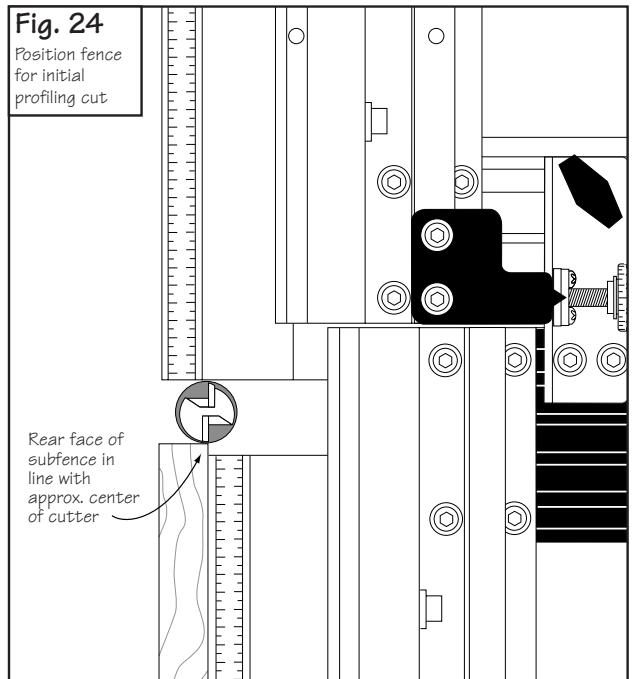


Fig. 24

Position fence for initial profiling cut



IN-LINE FENCE APPLICATIONS

With the infeed and outfeed fences set in-line, your INCRA TWIN can be used for a variety of typical fence applications including grooving and dadoing, as well as edge forming operations such as rabbeting, chamfering, and roundovers. You'll also find the in-line position useful for many specialty

operations. With the Hi-Rise fence cap in place, you'll be able to use vertical panel raising bits to make raised panels for cabinetry, and since its design is compatible with all INCRA joint-making accessories, you'll be able to cut countless varieties of box joints and dovetails.

General Purpose Fence

The essence of any INCRA JIG is its ability to accurately position your board for a cutting operation. In a nutshell, it is a precision fence system. Even when used as a joint maker, the fact is that you are simply applying a particular method of work to a very accurate fence system to produce the many possible joints. Above all else, the INCRA TWIN gives you the ability to make a cut exactly where you want it.

Using the TWIN as a general purpose fence is just as easy as using any other fence in your shop. In fact, it shares in common four things that all fences have: the straight edge or fence that your board will be pushed along as you make a cut, a scale, a hairline cursor, and a clamp. You will use your INCRA fence as you would any fence. That is, first you'll unclamp the carriage clamp then you'll look through the hairline cursor as you move the fence. When you see your measurement come under the hairline, you'll clamp the fence in place.

Of course, this is where the comparison ends, because unlike other fences, when you clamp the TWIN in place, it is exactly where you want it to be. Just get the mark on the scale close to the hairline cursor and the Automatic Positioning Control of the patented INCRA sawtoothed racks moves the fence to the exact location as you pull the carriage clamp up to lock the jig in place. It really is that easy. You're sure to find many cutting situations in the shop where the precision of the TWIN will benefit you and your work.

"Zeroing" the Fence to Your Router Bit

In order to ensure accurate cutting results from any fence for general purpose routing, the fence must first be "zeroed" to the cutter. To zero your INCRA TWIN, unlock the carriage clamp and slide the fence up to the edge of the cutter. Sight down the length of the fence to check for a gap between the fence and the cutter. Fine-tune any remaining distance by micro adjusting the fence position. When the gap of light disappears, the cutter will be "zero" distance from the fence. Check to make sure that the router bit is safely centered in the opening in the fence. Return the carriage clamp to the locked position, then slide the $\frac{1}{32}$ " scale to read 0" under the hairline cursor.

Fig. 25

General purpose fence

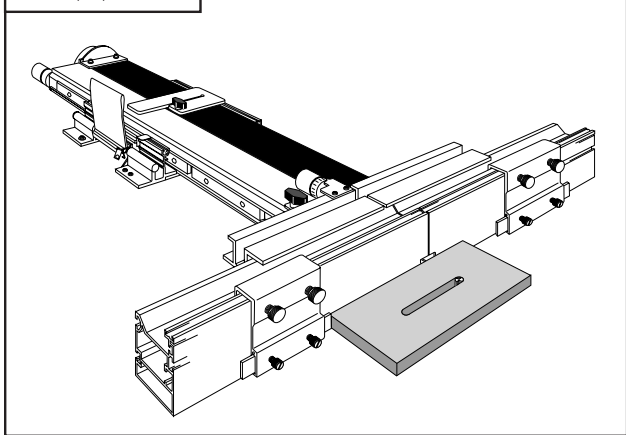
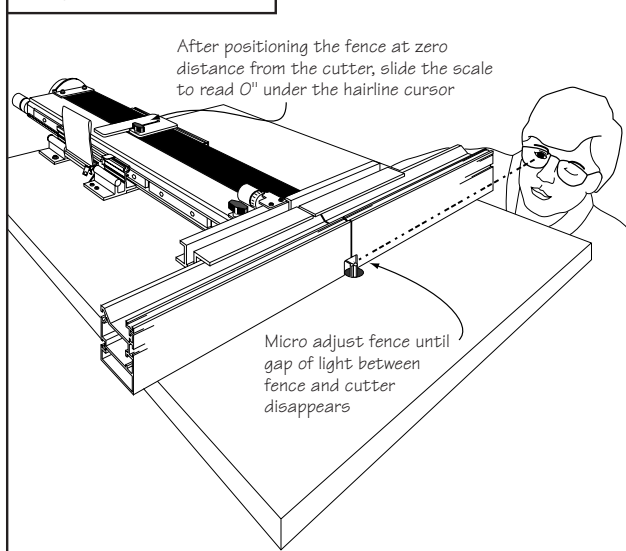


Fig. 26

Zeroing the fence to the cutter



TIP

For a truly precise "zeroed" setup, follow the instructions above, then move the fence to a scale reading of $\frac{1}{4}$ " and make a test cut on a piece of scrap stock. (Make sure the scrap stock has a square edge and that this edge is against the

fence during the cut.) Use a pair of machinist calipers to measure the distance between the groove and the edge of the board. If it does not measure exactly $.250$ ", just use the micro adjuster to accurately fine-tune the remaining distance.

Vertical Panel Raising

The introduction of the vertical panel raising bit has made cutting this all-important component of frame and panel construction a relatively simple operation for the router table. You'll find your INCRA TWIN with its built-in dust collection, adjustable fence gap, and Hi-Rise fence cap perfect for this operation. The setup is as follows:

1 Install vertical panel raising bit and set appropriate depth of cut

2 Adjust fence gap as necessary

See gap adjustment on page 12.

3 Attach the Hi-Rise fence cap

Use a straightedge to adjust the cap in line with the front of the fence. (see Fig. 6 on page 5.)

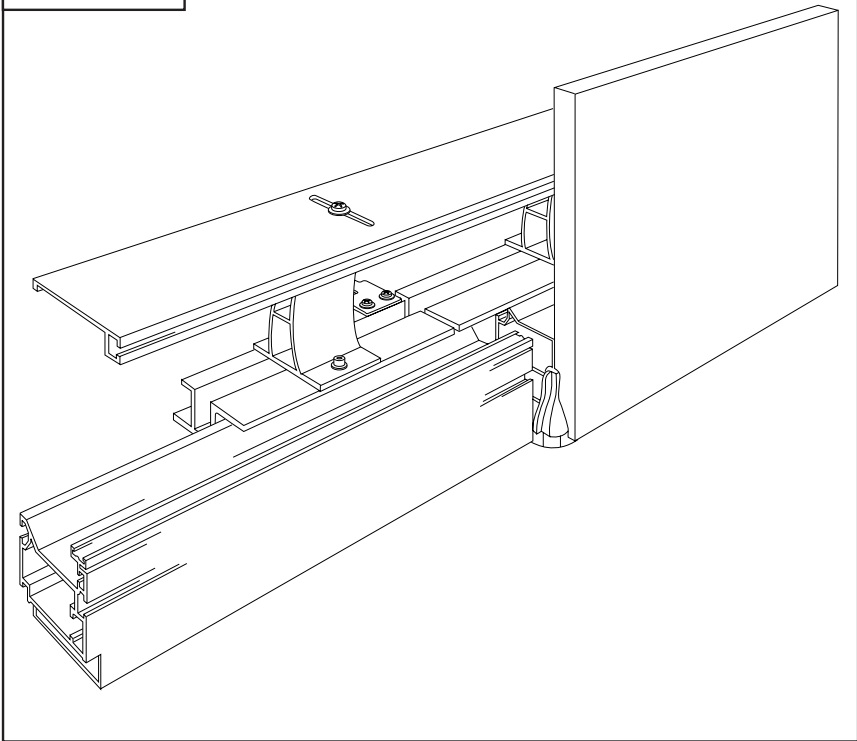
4 Sneak up on the final width of the cut

Do not make the full width of the cut in a single pass. Instead, use several light side-by-side passes, moving the fence back $\frac{1}{16}$ " or so after each pass.

TIP

A zero clearance subfence will greatly reduce tearout and increase support for all cutting operations. See page 12 for information on how to make and use this handy item. To use the fence cap in conjunction with a zero clearance subfence, mount the cap upside down with the T-slot still facing forward.

Fig. 27
Vertical panel raising

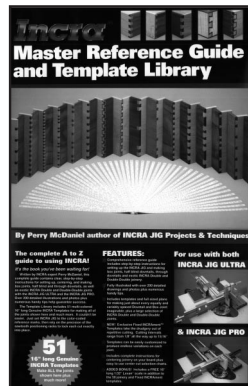


Safety Reminder

- Whenever using large diameter vertical or horizontal panel raising bits or any other large diameter bit, always follow that router bit manufacturer's operation and safety recommendations.
- Whenever it is necessary to remove large amounts of stock, always use multiple side-by-side passes to achieve the final cut. Several shallow cuts are safer and will yield better results.

Joint Making

Joint making represents one of the most exciting applications for your INCRA TWIN. Just by applying a little technique to the accuracy of the TWIN, you'll be able to add joinery for box and drawer making to your list of shop skills. The INCRA *Master Reference Guide & Template Library* included in the INCRA TWIN system package is a complete source book for joinery, including step-by-step instructions for box joints, half-blind dovetails, through dovetails, the INCRA double dovetail and the double-double box joint.



OFFSET FENCE APPLICATIONS

One of the most valuable features of the INCRA TWIN LINEAR is the ability to offset the infeed and outfeed fences. The offset fence adds a whole new dimension to the router table, allowing it to perform two new operations: jointing and shaping.

Jointing

Most woodworking projects require that your boards begin with at least one straight edge. This one edge then becomes the reference surface for subsequent perpendicular or parallel cuts. By using your INCRA TWIN and the setup described below, you'll be able to put a perfectly straight edge on your board at the router table, and because of the higher RPM of the router, you'll find the freshly jointed edge far smoother than any jointer machine can produce.

1 Install a straight bit

Install a 1/2" diameter (or larger) straight bit and set the depth of cut to slightly greater than the thickness of your stock.

2 Adjust fence gap as necessary

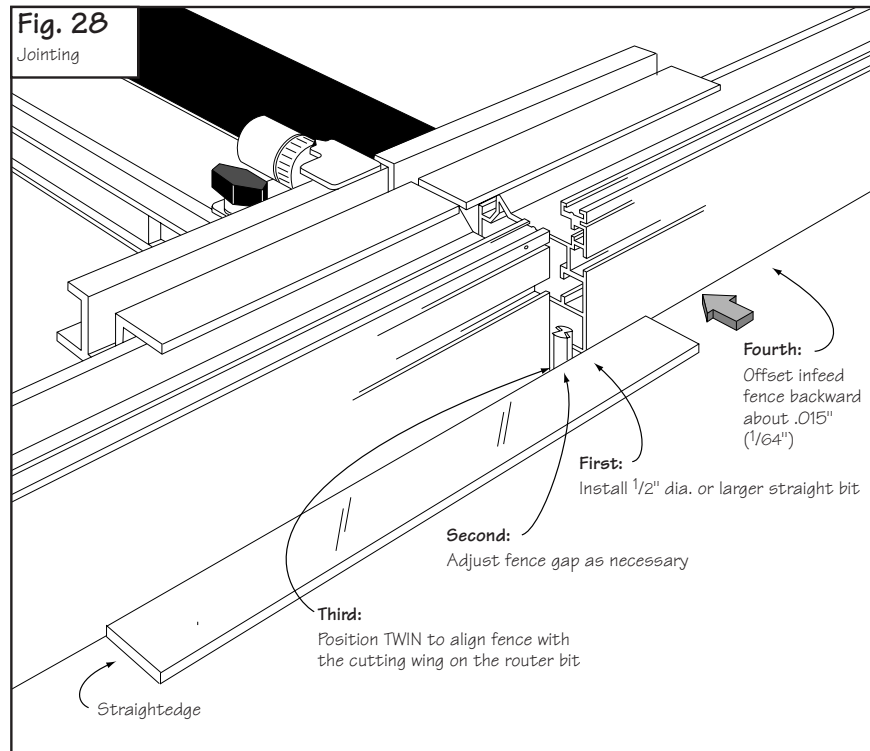
See Gap Adjustment on page 12.

3 Set initial fence position

Unlock the carriage clamp and slide the fence up to the cutter. Adjust the location of the fence to position the outfeed fence in line with the outermost cutting arc of the router bit. A straightedge placed against the outfeed fence can be used to help align the fence with the cutter, see Fig. 28.

4 Offset infeed fence

Set the desired infeed fence offset by adjusting the infeed fence backward. (See Infeed Fence Adjustment on page 10.) Moving the infeed fence back about .015" (1/2 turn clockwise with the black micro adjust knob) should produce a smooth cut.



Shaping

Many shaping operations involve the removal of the entire edge of a square piece of stock as it is moved past the cutter. With a careful offset fence setup, a shaping operation can simultaneously straighten or joint the shaped edge. Here's how:

1 Install router bit

Set desired depth of cut

2 Adjust fence gap as necessary

See Gap Adjustment on page 12.

3 Set initial fence position

Unlock the carriage clamp and slide the fence up to the cutter. Adjust the location of the fence to position the outfeed fence in line with the outermost cutting arc of the smallest diameter on the cutter, **Fig. 29**. A thin straightedge held against the outfeed fence can be used to help align the fence with the smallest diameter of the cutter. **Fig. 30**

4 Set the desired fence offset

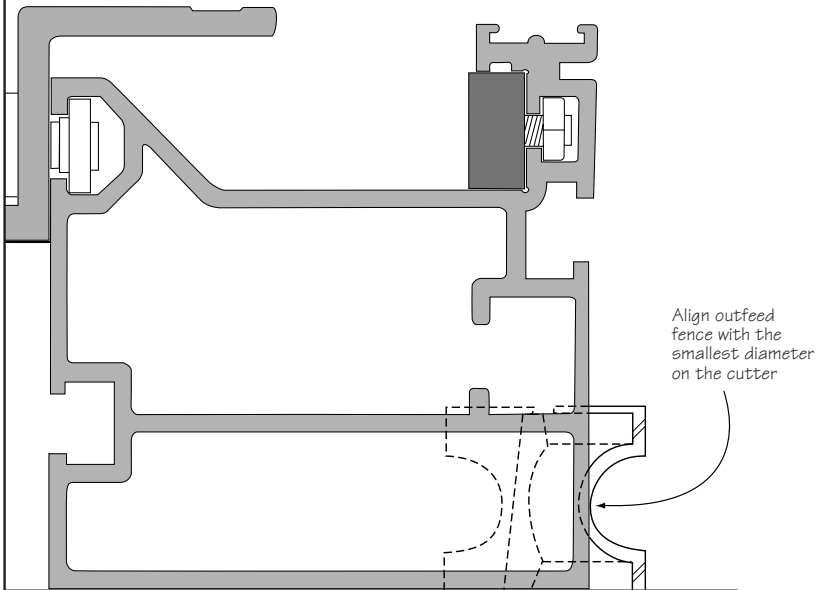
Set the desired fence offset by adjusting the infeed fence backward. (See Infeed Fence Adjustment on page 10.) Moving the infeed fence back about .015" (1/2 turn clockwise with the black micro adjust knob) should produce a smooth cut.

TIP

See page 12 for information on how to make a zero clearance subfence for your shaping operations.

Fig. 29

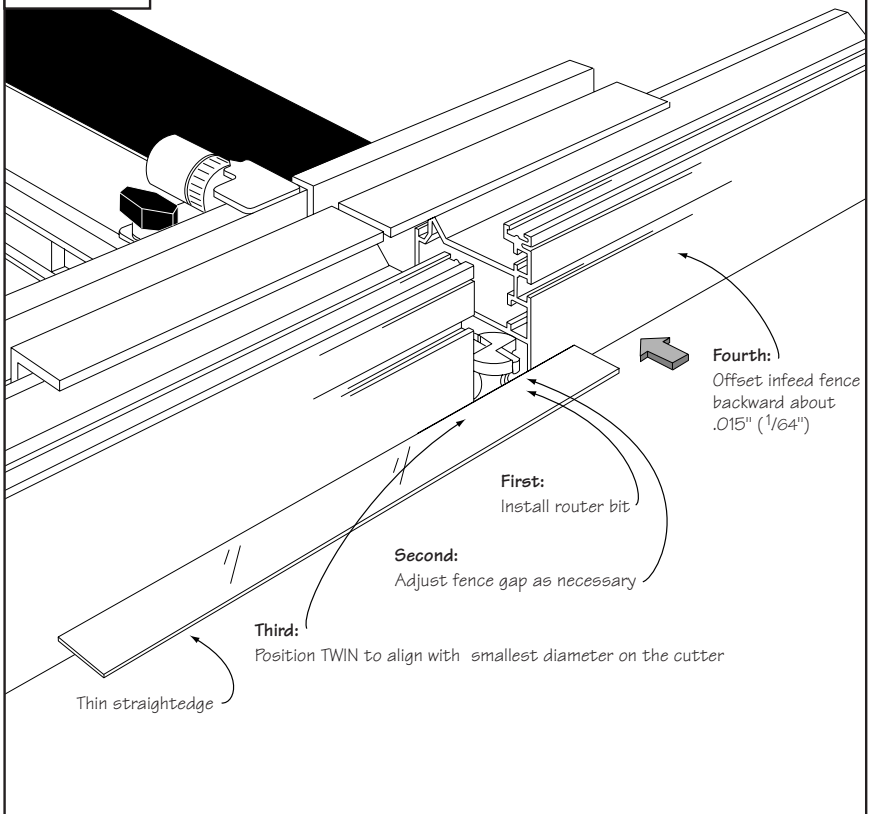
Set initial fence position



Note: View from outfeed side of table

Fig. 30

Shaping



ADJUSTMENTS

All of the components and features of your new INCRA TWIN LINEAR have been factory set and should require no further attention. If, however, you wish to adjust or recalibrate these components, the following information is provided to assist in performing the adjustments.

NOTE

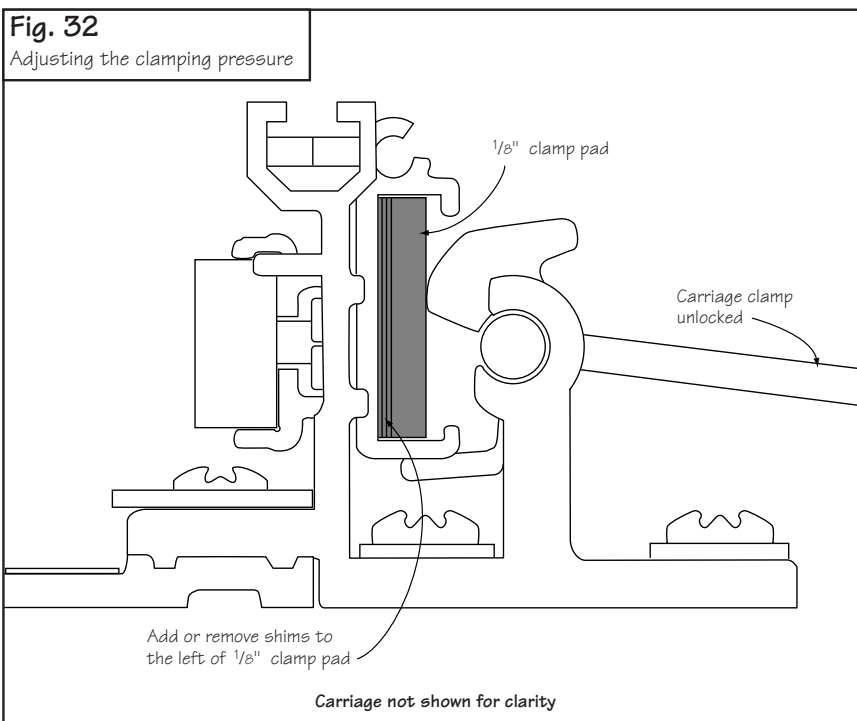
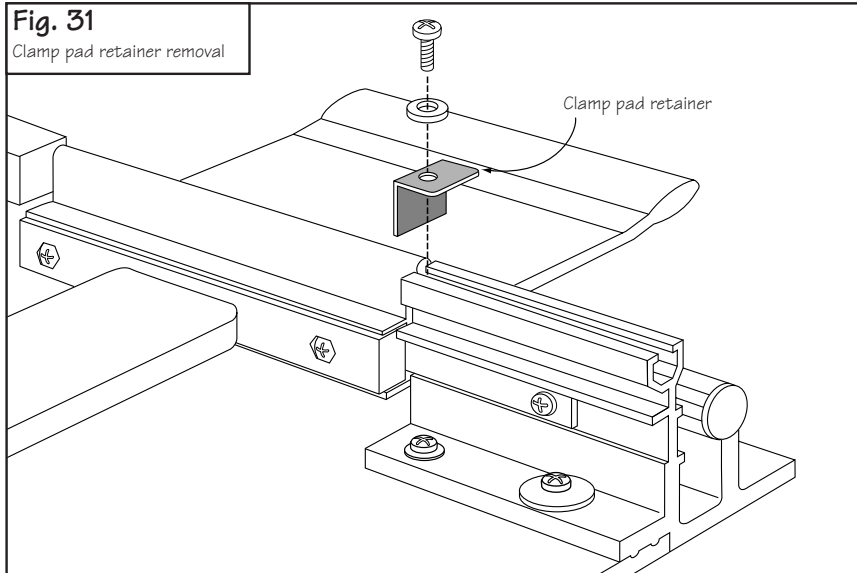
The INCRA TWIN's base must be attached to the router table with all eight mounting screws (see Fig. 3 on page 4.) before adjusting the clamping pressure.

Adjusting the Clamping Pressure

The INCRA TWIN LINEAR carriage clamp was designed to make it easy for the operator to adjust the clamping pressure to his own individual preferences using the supplied clamp pad shims. Here's how:

Unlock the carriage clamp. Remove the small phillips head screw, washer, and "L" shaped plastic clamp pad retainer located just to the right of the clamp (see Fig. 31). Leave the hex nut in place in the T-slot below. Your owner's manual hardware pack contains (3) .005 X 7/8" x 4" clamp pad shims. If you want to increase the clamping pressure, add one of the shims into the clamp pad slot shown in Fig. 32. Check the clamping pressure and adjust further as necessary. The shims should be placed to the left of the 1/8" clamp pad shown in Fig. 32 so that the clamp always touches the 1/8" pad, not the shims. To decrease the clamping pressure, remove one of the existing thin shims. When you are satisfied with the clamping pressure, replace the plastic clamp pad retainer and secure with the screw and washer. The screw is long enough to start into the hex nut without removing the nut from the T-slot.

CAUTION: Whenever making clamping pressure adjustments, always make sure that adequate pressure remains to hold the carriage rigidly in place when clamped in the fully extended position.

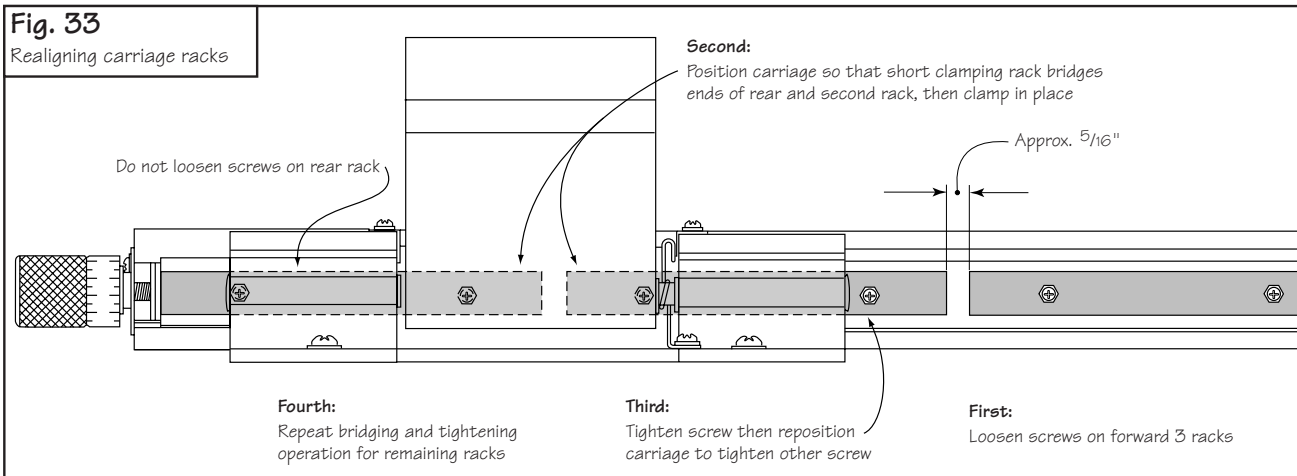


Realigning the Carriage and Fence Racks

On the side of the outfeed (gold) carriage you'll notice (4) sawtoothed INCRA racks. To realign these racks, loosen the phillips head screws that hold the forward (3) racks in place. Do not loosen the screws on the rack at the rear end of the carriage. Position the carriage in the base so that when the carriage clamp is pulled up into the locked position, the short clamping rack bridges the gap between the already tightened rear rack and the second rack. See **Fig. 33**. Tighten the one mounting screw you have access to. Then unlock the carriage clamp and slide the carriage

forward to tighten the other screw. Continue with this bridging and tightening operation between racks #2 and #3, then finally between #3 and #4.

Realign the fence racks in the same way that the carriage racks are aligned. Leave one of the two racks on each fence in place while loosening the screws on the other. Bridge the gap between the loosened and tightened racks using the INCRA Stop, then tighten the two screws on the loose rack.



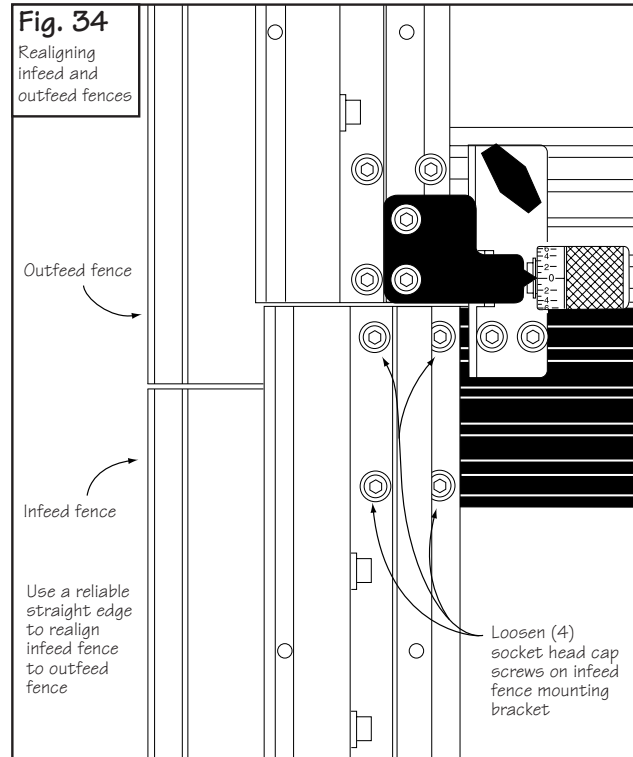
Realigning Infeed and Outfeed Fences

NOTE

Before realignment, make sure to remove any offset that may exist between the infeed and outfeed fences and lock the carriage clamp in place.

Loosen the (4) socket head cap screws that secure the infeed fence mounting bracket to the infeed (black) carriage, **Fig. 34**. Using a reliable straightedge, hold both the infeed and outfeed fences against the straightedge and tighten the (4) screws a little at a time until all are secure.

Adjusting the fences square to the table is done by loosening the same (4) socket head cap screws and placing shims between the fence mounting bracket and carriage. Fence squaring adjustments may be performed as necessary to one or both fences.



PARTS AND OPTIONAL ACCESSORIES

Part #	Part Description	Price
TL-CURSOR	Hairline Cursor (with mounting hardware)	\$ 7.95
ISTOP	Stop Positioner (with mounting hardware)	\$22.95
IEXT18	18" Stop Extender Bar with auxiliary stop, scale and hardware	\$ 15.95
IJPT1	<i>Inkra Jig Projects & Techniques Book</i> Features 14 original Incra projects, 4 exclusive new Incra joints, and a wealth of tips and techniques that will help you master the Incra Jig	\$22.95
TL-SCALE16	16" long 1/32" Lexan® floating scale	\$ 2.95
TL-SCALE21	21" stainless steel primary scale	\$ 9.95
TL-SCALE31	31" stainless steel primary scale	\$ 14.95

PRODUCT INFORMATION

For a product information update on the complete Incra line of tools, please see your nearest dealer. If you are unable to locate a store nearby, or if you have trouble finding a particular product, we will honor your order directly.

For a product information brochure, call, write or fax to:
Taylor Design Group, Inc.
P.O. Box 810262, Dallas, TX 75381
Tel: (972) 418-4811 Fax: (972) 243-4277
Web Site: www.inkra.com

WARRANTY

Taylor Design Group, Inc. warrants this product for one year from date of purchase. We will repair any defects due to faulty material or workmanship, or at our option, replace the product free of charge. Please return the failing component only, postage prepaid, along with a description of the problem to the address below. This warranty does not apply to parts which have been subjected to improper use, alteration, or abuse.

LIFETIME WARRANTY ON POSITIONING RACKS

If an Incra positioning rack in this tool becomes damaged for ANY reason, Taylor Design Group will replace it free of charge for as long as you own your tool. Return the damaged rack, postage prepaid, and allow 1 to 2 weeks for delivery.

NOTE:

Replacement parts cannot be sent unless damaged racks have been received by Taylor Design Group.

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