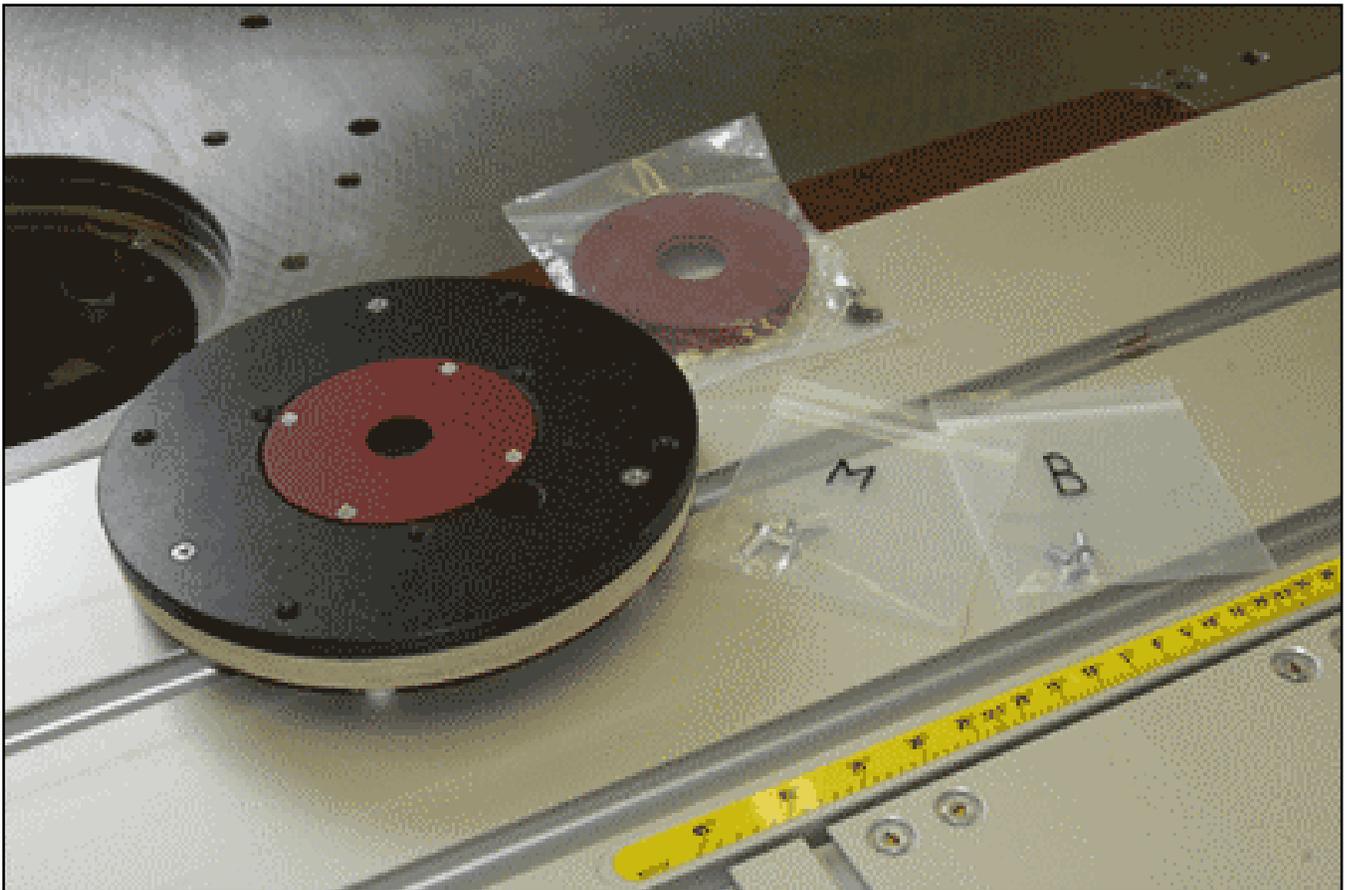


## **High Speed Router Adapter for the Felder KF700 Saw/Shaper Machine.**

This document describes an attachment for using a handheld, fixed-base router with the Felder KF700 saw/shaper machine. This attachment gives users access to routing speeds up to 24,000 RPM, in a routing table with a large sliding table.

This router attachment for the Felder KF700 is based on the Woodpecker router base platform and drops in the cavity for the shaper spindle tool. The attachment is the same diameter as the large removable steel ring on the KF700 table. It is constructed from a black phenolic plate and a plywood spacer, and includes four aluminum ring inserts for adjusting the size of the hole as required for the specific router bit in use.

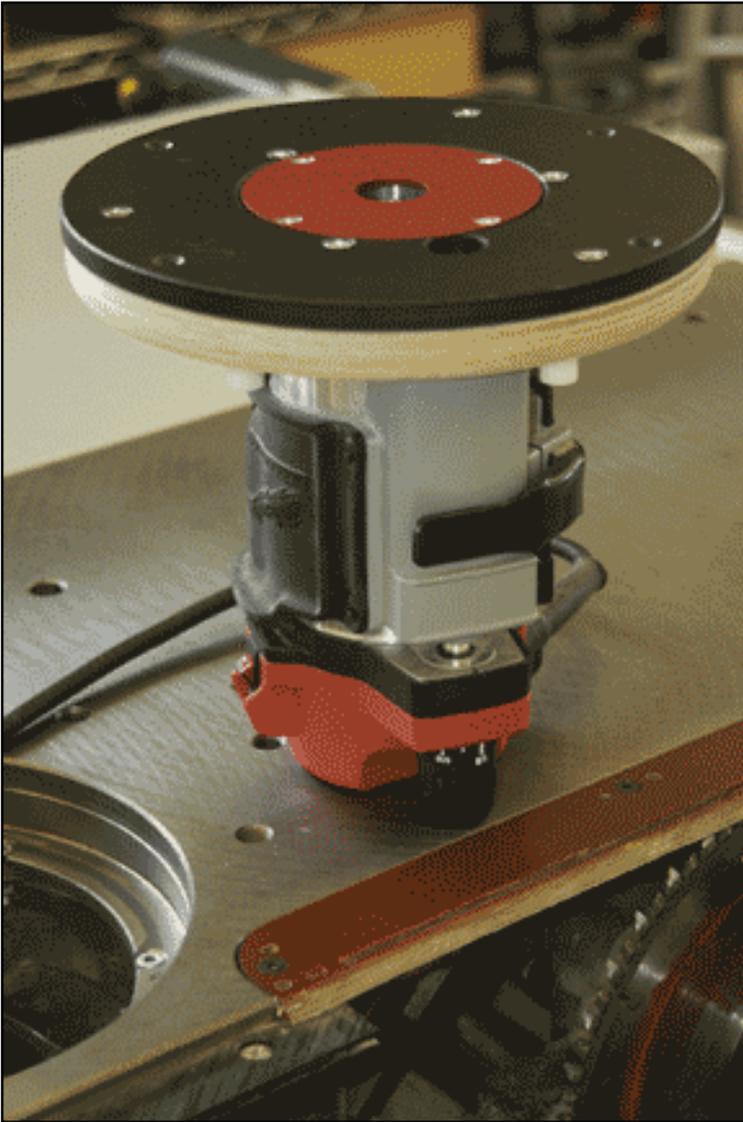
The phenolic plate is drilled to accept the Milwaukee 5615-20 1-3/4 horsepower BodyGrip Router, or the Bosch 1617EVS 2-1/4 horsepower variable speed fixed base router. Both routers are available from Amazon for about \$170. Each router has its own advantages and disadvantages as outlined elsewhere in this document.



Shown above are the parts included with the attachment kit. They include:

- The black phenolic router base with attached plywood spacer
- A package of extra inserts in various hole sizes
- Two bags of screws to mount the router to the base.

## Installing the Adapter on the Milwaukee 5615-20 Router



Shown to the left is the Milwaukee 5615-20 1-3/4 horsepower (11 AMP) BodyGrip Router attached to the router adapter base. This router is small and compact, has a plunge-style micro-adjuster which can be adjusted from atop the table using a nut driver, which is a distinct advantage for this application. The router has a quick release to disengage the micro-adjuster, and comes out of the base quickly and easily for bit changes. Unlike the Bosch, this router is not variable speed, nor does it have electronic speed control.

To install the router adapter to the Milwaukee router, remove the factory installed plastic router base that came on the router by removing the three screws. Replace the factory base with the router adapter using the three flat head Philips screws provided in the small Zip-Loc marked "M" for Milwaukee. The plywood spacer ring on the adapter encircles the metal base on the router.

Note the orientation of the router to the adapter. You have three orientations for attaching the router to the adapter – two of them are wrong.

Position the adapter base so that the largest round hole in the black base is positioned over the hex-head height adjustment spindle inside the router casting. That spindle can be seen at the bottom in the photo to the right. With the adapter positioned with the hole over the height adjustment spindle, you can utilize a long nut driver to adjust the height of the bit.

Also, with the router oriented in this direction, the body release lever and the micro-adjustment dial will be on the sliding table side of the KF700 within easy reach.



## Installing the Adapter on the Bosch 1617EVS Router



This photo shows the Bosch 1617EVS 2-1/4 horsepower variable speed fixed base router mounted to the adapter for use in the KF700. The primary advantage of this Bosh router over the Milwaukee is the electronic speed control (EVS) and the fact that it is variable speed making it more suitable for larger diameter router bits. The disadvantage is that you can not adjust the cutting bit height from above the machine – you have to retract the sliding table, open the sliding cover to the shaper cavity and adjust from below.

The Bosch router has a quick release latch to facilitate coarse up/down movement of the router motor in its housing. There is also a micro-adjustment knob as shown in the photo to the left. The router motor assembly can be taken out of the base to facilitate bit changes above the table.

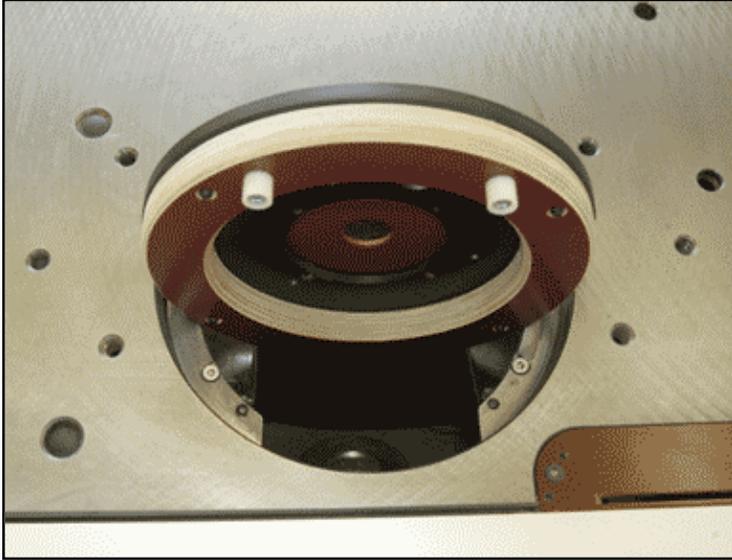
To install the adapter, first remove the two wooden handles on the router by removing the center screws in the handles. Then remove the factory installed plastic baseplate. The router should look like the picture to the right before installing the adapter. Install the adapter using the three flat-head Philips screw in the Zip-Loc marked “B” for Bosch. The plywood spacer ring on the adapter encircles the metal base on the router.

The orientation of the adapter to the router is important. There are three orientations that can be selected – two of them are wrong. Take note of the largest hole in the black base on the adapter. You want to align that hole above the latch lever on the router as shown in the photo above. In this position, when you open the sliding cover over the shaper cavity, the latch lever and micro-adjuster will be on the sliding table side of the machine for easy access by the operator.



## Installing and adjusting the adapter in the KF700

In order to make room for the router to extend down into the KF700 machine base, you must **first lower the shaper trunnion fully and tilt it at least 35 degrees.**



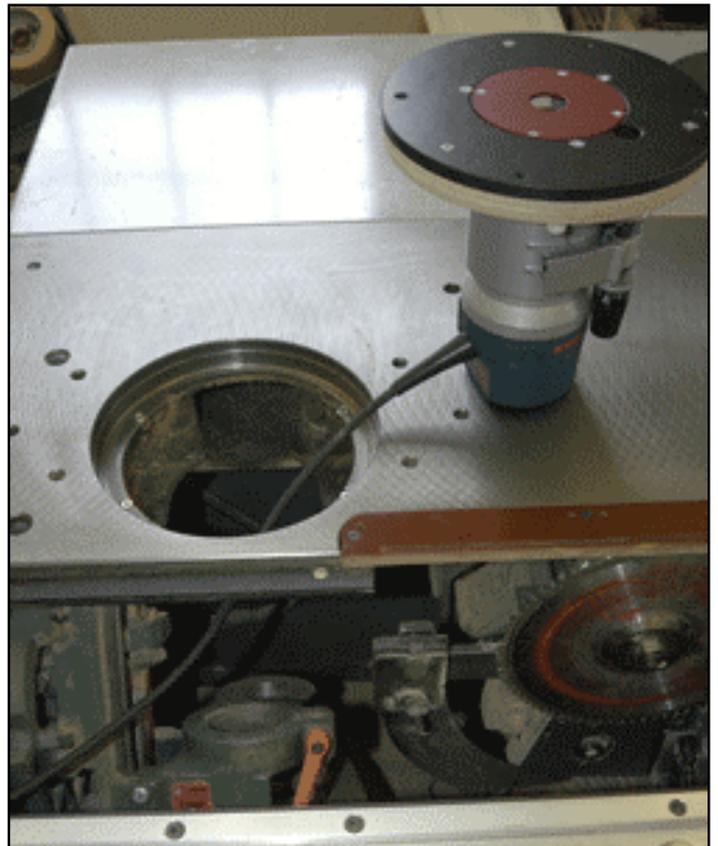
You will note that the adapter has two Delrin studs on the bottom. These studs index the adapter to the cutaway section in the shaper opening of the KF700. The photo below shows (with router removed for clarity) how these studs lock the router from rotating within the cutout when the base is turned flat and installed properly.

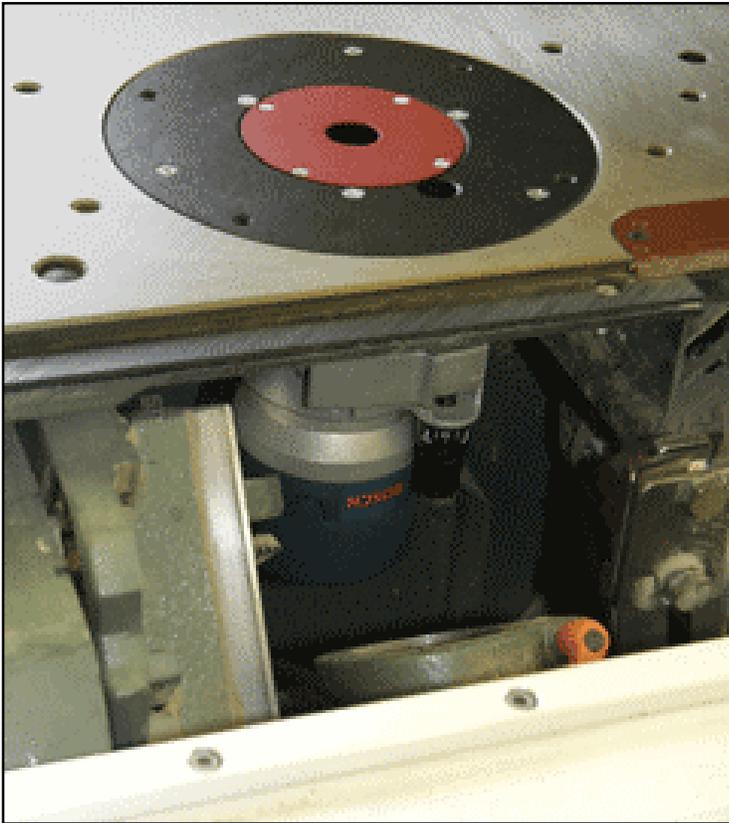
Before attempting to drop the router into position in the shaper cavity, thread the router cord through the cutout and off out of the way. The photo at right shows the trunnion down and tilted out of the way, and the router cord properly lead into the KF700 machine base.

The adapter should drop into place without interference provided you have the router properly oriented to the indexing studs and the studs properly positioned to the cutout.

The adapter should easily drop into position when properly oriented. **DO NOT** force it down and flat to the table or you will have a devil of a time getting it out.

If the router is properly oriented to the indexing studs, it will clear the plastic dust port that encircles the opening in the machine base. If your router is not properly indexed to the adapter, it may not seat properly because it is hanging up on the dust port. Double check this before you put downward pressure on the adapter, or you risk breaking the dust port.



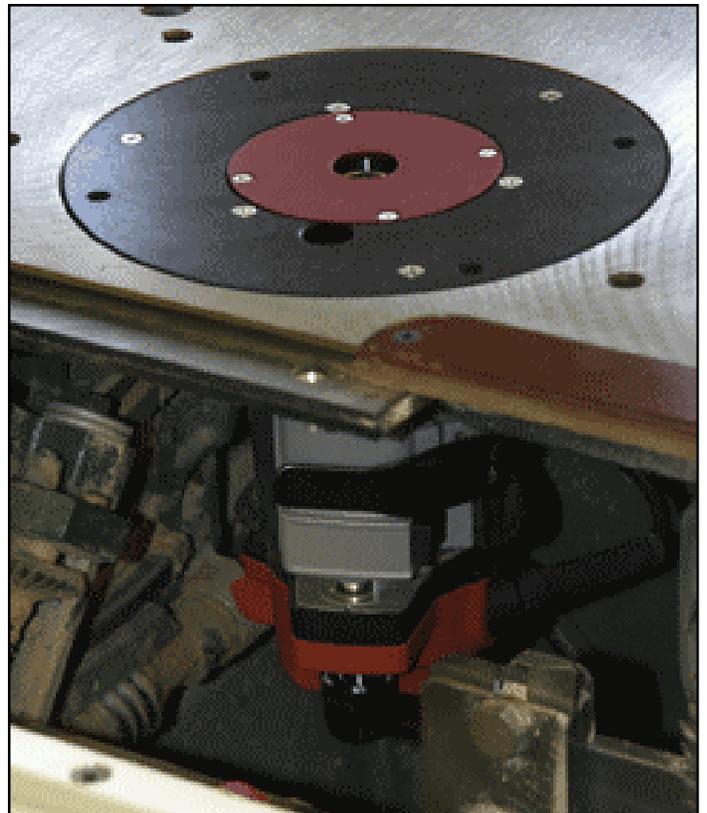


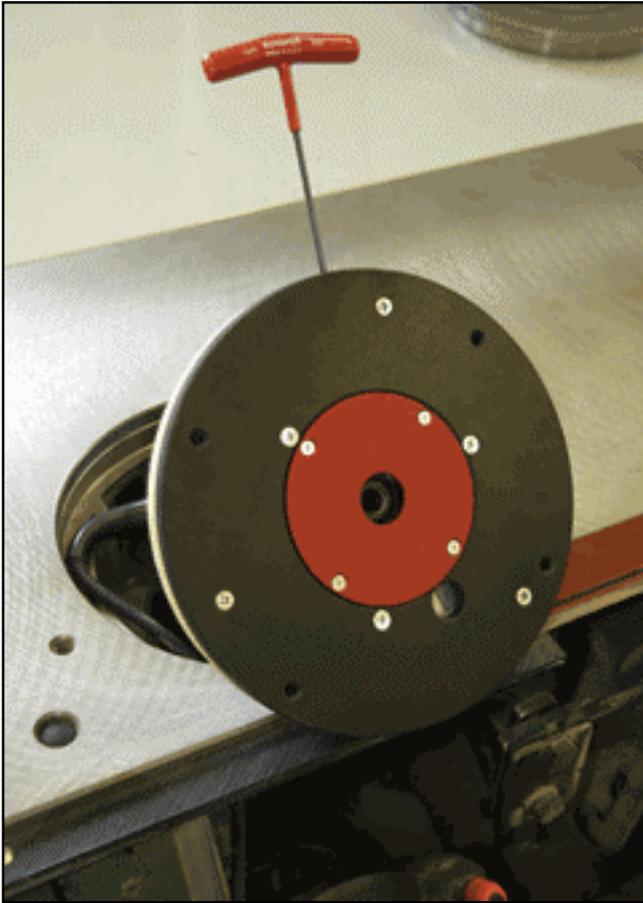
### **Bosch Router**

When properly indexed the Bosch router will be positioned as shown on the left – with the router release lever and micro-adjuster on the sliding table side of the machine.

### **Milwaukee Router**

When properly indexed the Milwaukee router will be positioned as shown on the right – with the router release lever and micro-adjuster on the sliding table side of the machine.

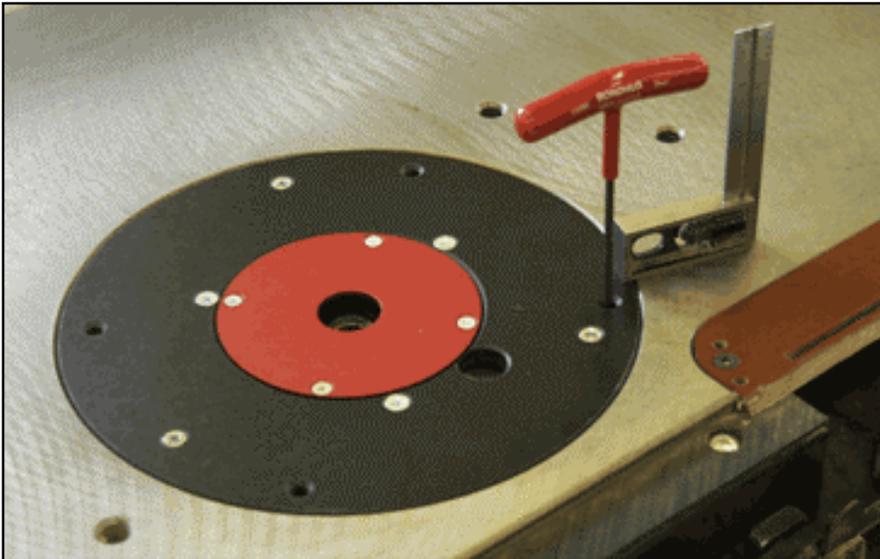




### **Adjusting Adapter Tolerance**

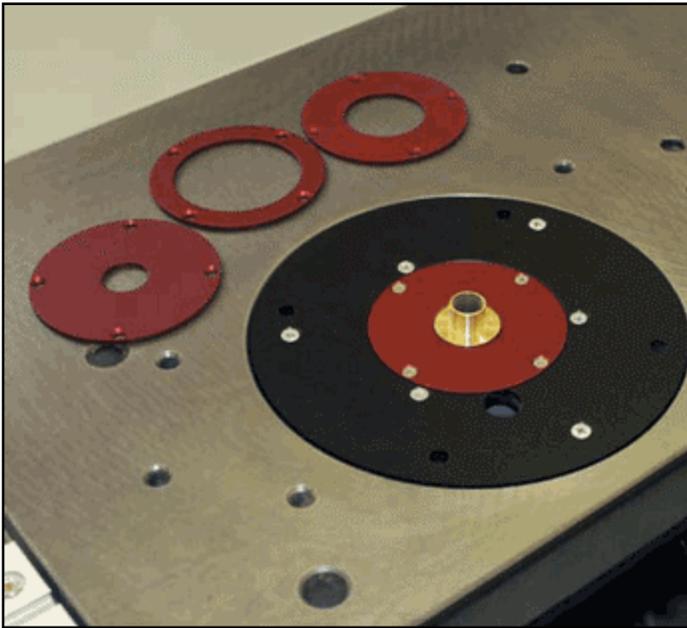
The adapter phenolic plate is milled using a CNC controlled mill to 0.1mm smaller in diameter than the precise dimensions of the shaper cutout on the KF700. A hex socket set-screw is provided on the side of the plate opposite the indexing studs, and this can be used to eliminate any sideways shifting of the adapter under load. If you have trouble getting the adapter to drop easily into the shaper cavity, first try turning in the set-screw with a 3mm hex wrench. The photo at left shows the location of this set-screw when the indexing studs are properly aligned over the cavity below. The set-screw is purposely very tight.

If you do not adjust this set-screw properly to eliminate shifting, the side forces of the router cutter under load may cause the bit to wander as you cut.



### **Adjusting Adapter Level to Machine Top.**

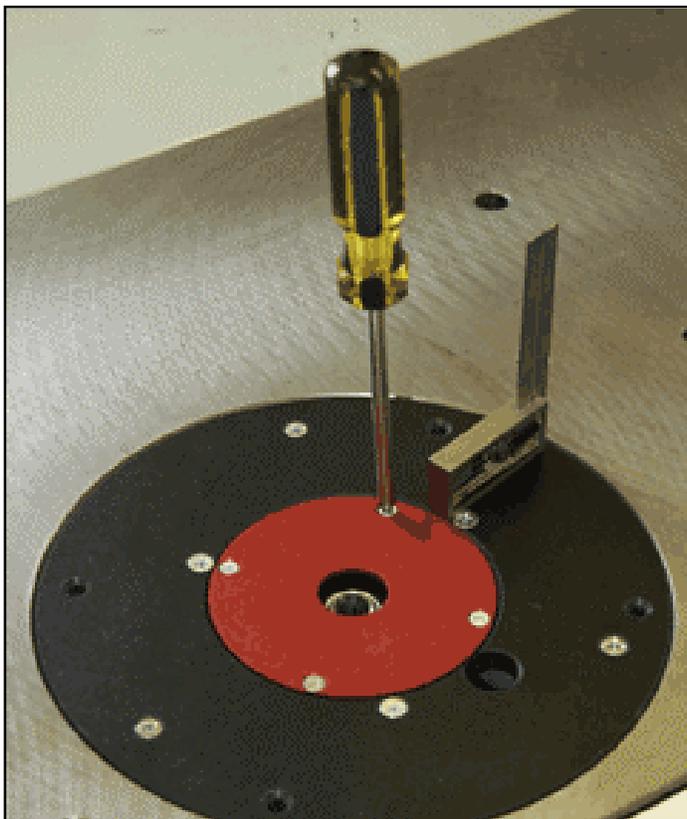
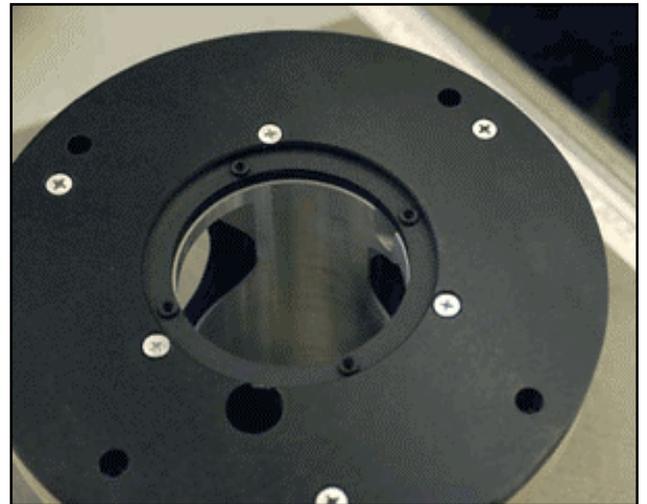
There are four additional hex socket screws used to level the phenolic plate to the machine base of the KF700. These are accessible from above the machine using a 3mm hex wrench as shown below. Adjust the set-screws so the base is level (doesn't rock) and is at or just below the height of the machine top on at all four screw locations.



## Removable Ring Inserts

One advantage of the removable ring inserts is the ability to install an insert that accepts industry standard (Porter Cable) router template guide bushings. This photo shows the aluminum ring insert that adapts to the Porter Cable guide bushings. An example brass guide bushing is installed. These guide bushings are used for template routing applications and are available through a variety of tool dealers. Additional ring inserts are available from Woodpeckers at [www.woodpeck.com](http://www.woodpeck.com)

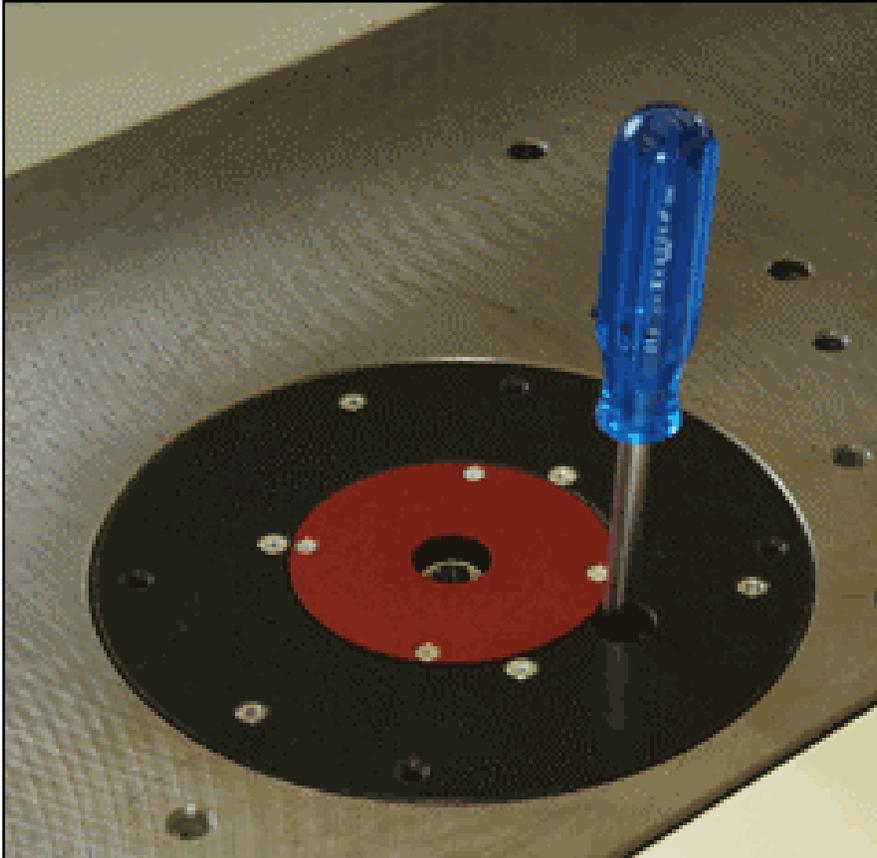
The aluminum rings are secured with four small Philips-head screws. The photo right shows the rubber o-rings under the aluminum ring attachment points that facilitate height adjustment of the aluminum rings.



Using a Philips screwdriver, you can level the ring inserts to the phenolic base as shown on the left. The adapter includes a spare set of o-rings and the removable aluminum rings shown above.

## Changing Router Bits

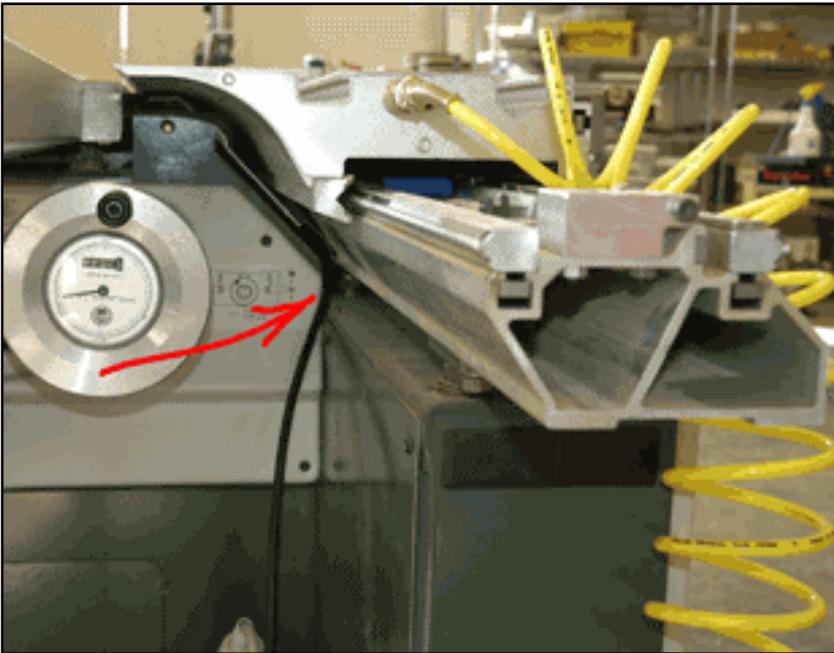
Both the Milwaukee and the Bosch routers are removed from their corresponding housings to facilitate bit changes. Neither router elevates to the extent that bit changes can be accomplished from above the table with the router in operating position. The Milwaukee router is slightly easier than the Bosch to remove from its base for bit changes. You should be able to remove the router from its housing while leaving the adapter and housing in place in the KF700.



## Bit Height Adjustment

The Milwaukee 5615-21 BodyGrip Router bit height can be adjusted from above the table with an extended length 3/8 inch nut driver. This nut driver is available from McMaster-Carr for about \$7. ([www.mcmaster.com](http://www.mcmaster.com) part number 7142A15).

The Bosch 1617EVS router, while slightly more powerful than the Milwaukee and also variable speed, is not adjustable from above the table in this manner. To adjust the Bosch router cutter height, release the locking lever on the router housing and turn the micro-adjuster from inside the shaper cavity on the machine.

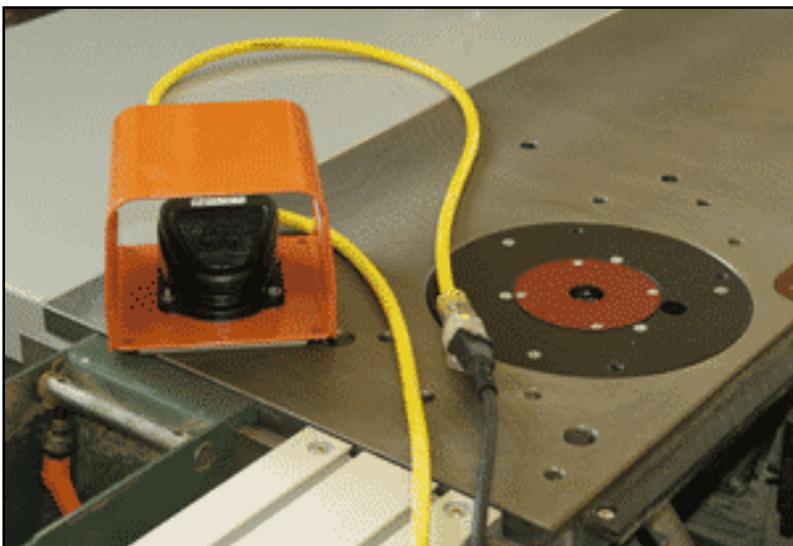


## Powering the Router

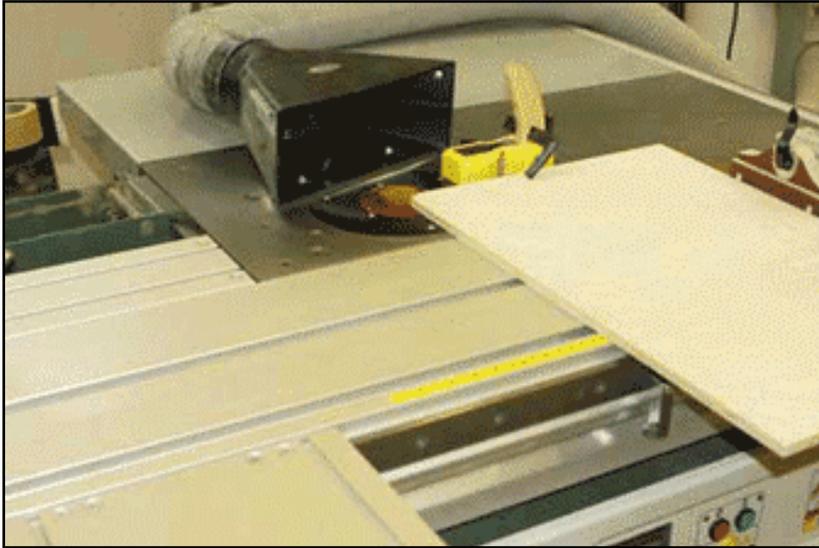
The power cord from the router exits the machine under the sliding door that covers the blade/shaper spindle area. There is plenty of room here for the cord to exit the machine to the rear. Take care not to leave a long length of router cord inside the KF700 that might get caught up in the saw blade.

## Foot Switch

You may wish to connect the router power cord to a foot-actuated switch on the slider siding table side of the machine. The router electrical cord is plugged into the switched socket from the foot switch.



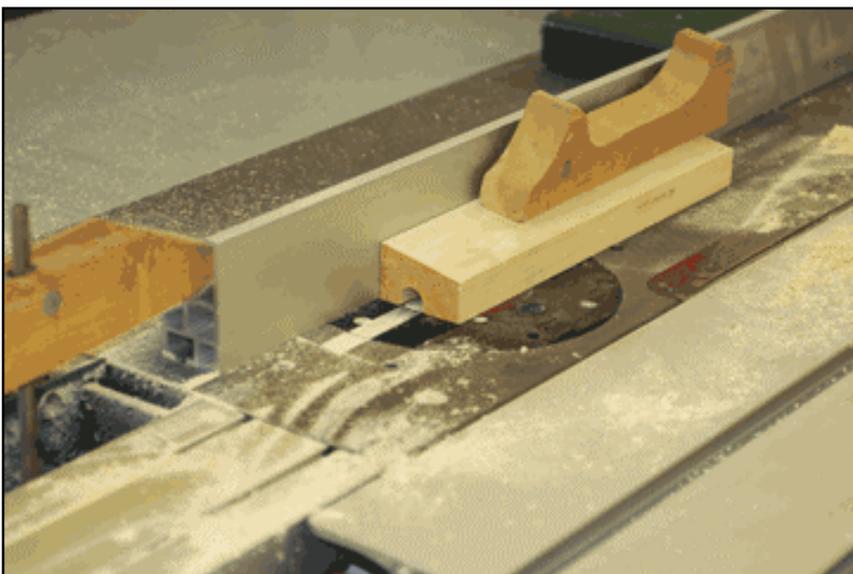
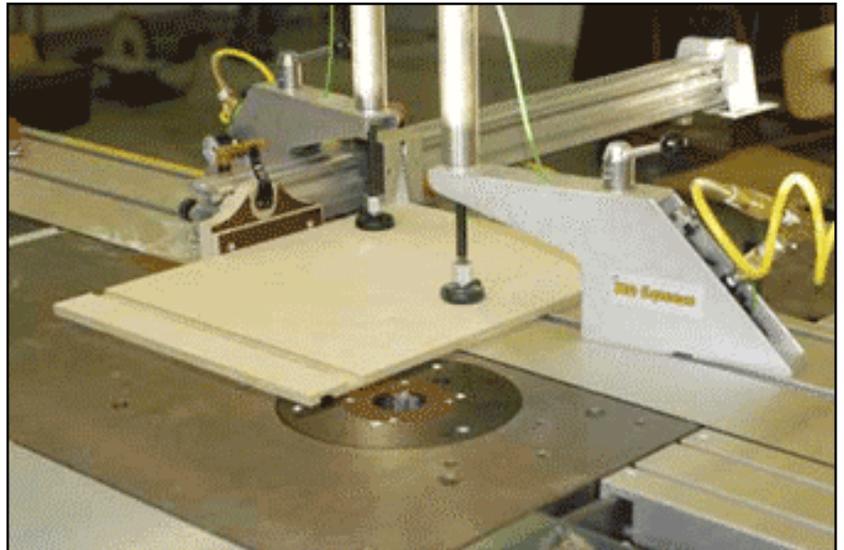
The switch shown on the left is available from Enco ([www.use-enco.com](http://www.use-enco.com)). The switch is Enco part #990-3877, and the safety cover is Enco part #505-0022. The combination is about \$60. The foot switch does not come with a cord. You must splice in an AC extension cord to the switch to produce a switched AC extension outlet. Select an AC extension cord with an illuminated outlet socket for safety. This alerts you to the presence of power from the foot switch when you are handling the router.



## The Router in Operation

The router attachment is shown here in operation. The bit in this example is a lockmiter bit. The stock is clamped to the slider. This dust hood is an Aigner accessory, and it is effective in this type of routing operation. The yellow device on the table is a magnetic feather-board forcing the far edge of the stock down to the surface of the table.

This photo shows a setup for machining dados. It should be noted that this machining operation exerts considerable sideways force on the stock – so an effective clamping strategy must be employed to obtain a straight dado cut. For this operation, dust collection is best facilitated using the built in dust port on the KF700 machine.



This photo shows the router attachment used to mill a 1¼" deep by ¾" wide core box flute in poplar. The rip fence is used for this operation – but look closely and you will see the fence is clamped to the back of the table with a Jorgensen clamp. A clamp is required to eliminate the flex of the fence in this extended position.

For additional information, contact David Best via e-mail: [dbest@stonehorsefarm.com](mailto:dbest@stonehorsefarm.com)