

## Tip #24 Shaping

The difference between a plain edge and shaped one is often enough to elevate the beauty and elegance of the simplest project. The shaper not only makes it possible to embellish otherwise square, plain edges, but it also has practical applications as well. Among other things, you can form the parts of a drop leaf table joint, do drawer joints, make a tongue-and-groove joint, shape half-round or curved moldings, and so on.

The Mark V becomes a very efficient shaper when it is in the drill press mode and equipped with the special shaper accessories (Figures 9-1 and 9-2). The shaper insert should always be used to provide maximum support for the work around the cutting tool. For fence shaping the shaper fence is secured to the table. Both fence boards are adjustable endwise and front to back, so the opening for the cutters can be kept small for safety. The infeed board is screw-adjusted for depth of cut. Pins that are screwed into the shaper insert are used for pin shaping.

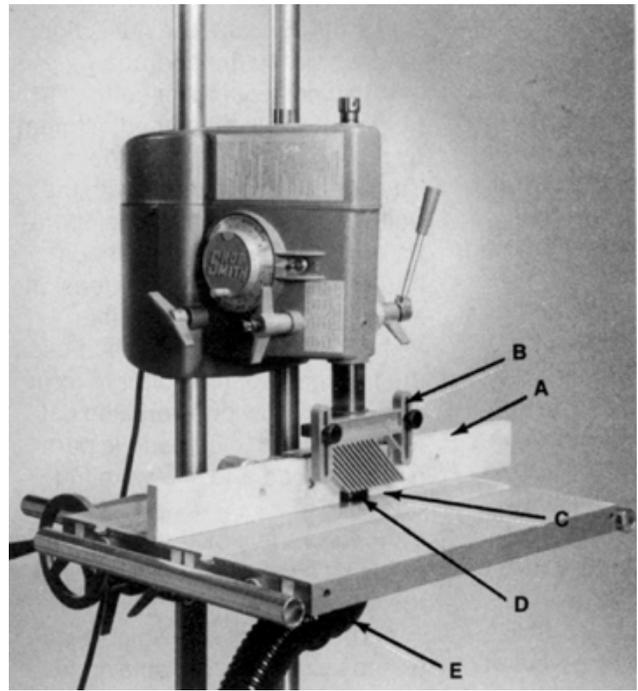
### SHAPING SAFETY

**Warning:** Before using the shaping accessory, read and understand the following safety instructions:

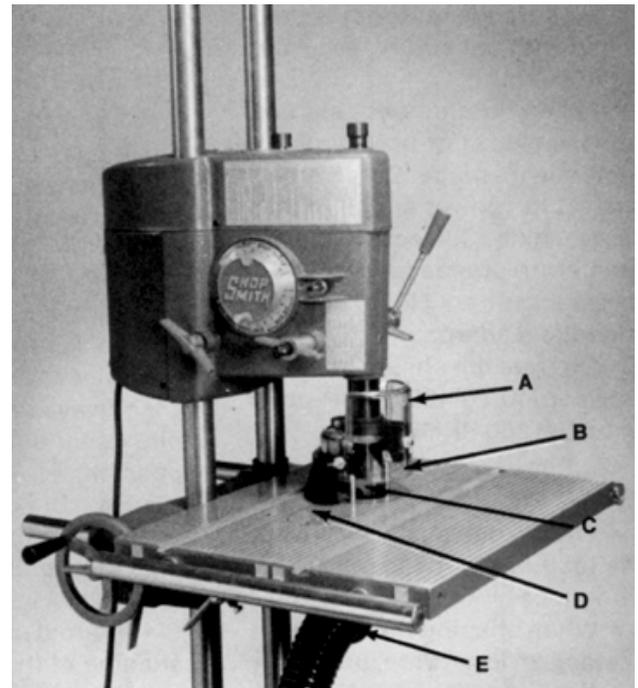
There are two major factors to consider about the safe operation of the shaping accessory: the speed and the sharpness of the cutter. Remember that the faster the speed and the sharper the cutter, the smoother the cut.

**Danger Zone**—The danger zone extends 3" out from cutter in all directions. Work cautiously and slowly, especially when shaping against collars. Working this way will not only keep your hands safe, but will also increase the quality of your output.

**Guards for the Shaper**—Shaper guards must be used for all shaping operations. The fence guard is mounted on the shaper fence and the feather board guard is mounted to the quill when fence shaping. The feather board guard is adjustable to accommodate various thicknesses of stock. A feather board is used to hold stock up to 6" wide against the fence.



**Figure 9-1.** The accessories used for fence shaping are: (A) shaper fence, (B) feather board guard, (C) shaper insert, (D) shaper arbor and cutter and (E) dust chute.



**Figure 9-2.** The accessories used for pin shaping are: (A) circular shield and brush, (B) pins, (C) shaper arbor and cutter, (D) shaper insert and (E) dust chute.

The circular shield and brush assembly is mounted on the quill when pin shaping. The shield is adjustable to accommodate various thicknesses of stock.

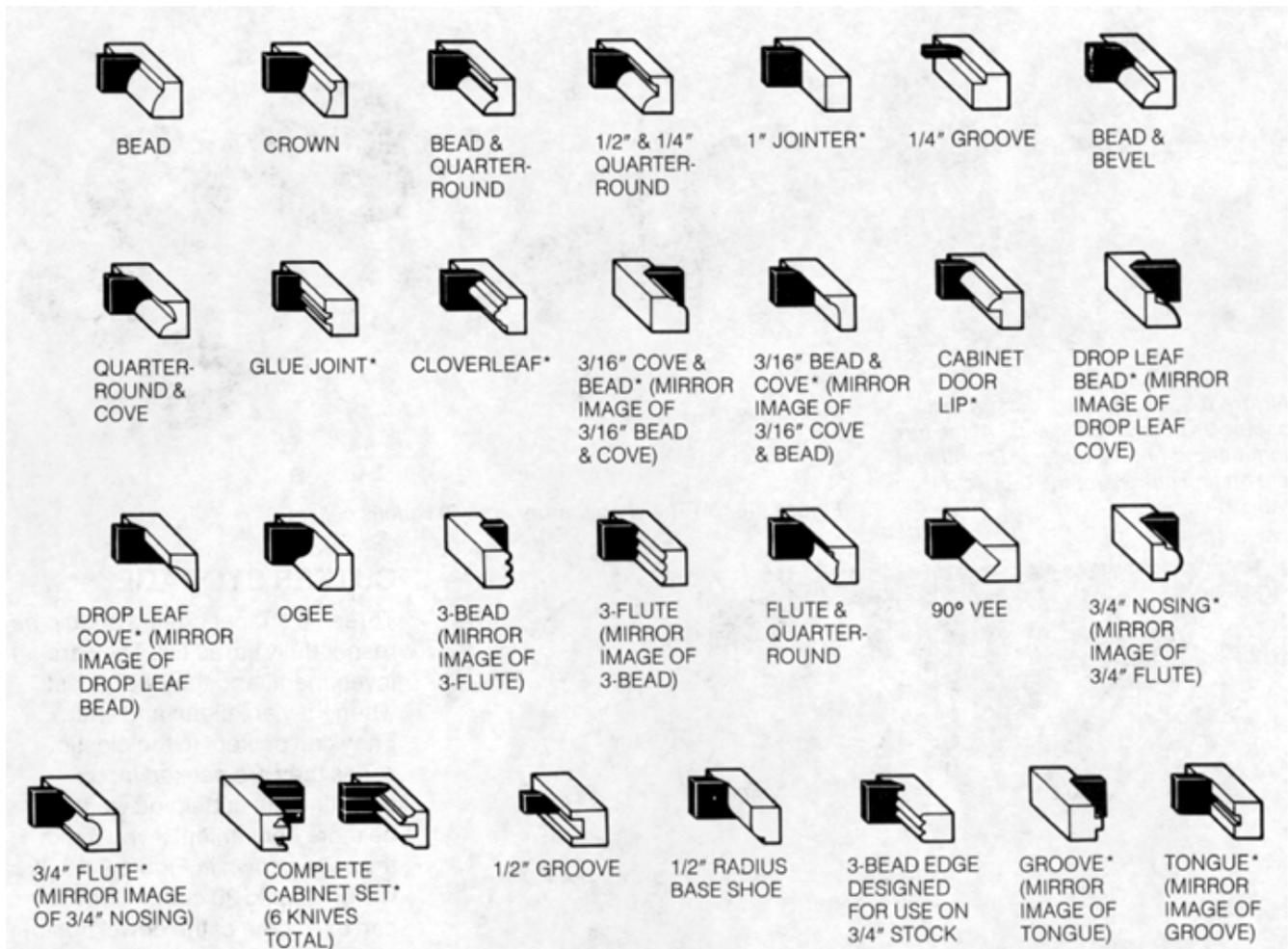
- Wear proper eye and ear protection.
- Always use the shaper insert.
- Wear a dust mask or connect a dust collection system to the dust chute. Keep the dust chute mounted to the shaper insert even if you do not have a dust collection system. The chute guards the cutter below the table. You can collect dust and chips in a trash receptacle positioned beneath the table.
- Tuck long hair under a hat or tie it up. Do not wear ties, gloves, jewelry or loose clothing. Roll sleeves up above your elbows. Wear nonslip footwear.
- When mounting cutters and collars, make certain that the tongue washer is correctly installed and directly under the hex nut and that the nut is tight. Also that the arbor setscrew is tightened against the flat of the spindle.
- Be sure the cutter(s) is positioned with the cutting edge facing to the left.
- Listen for chatter or signs of looseness at start-up. If you hear, see or suspect problems, turn off the power and unplug the machine. Correct any problem before proceeding.
- Keep cutters clean, maintained and sharp.
- Operate the shaper at speeds between "U" (4400 RPM) and "Fast" (5200 RPM).

### **Fence Shaping**

- When edge shaping, always use feather boards to guide the workpiece.
- When shaping the end grain of stock 2" to 6" wide, use your miter gauge with safety grip to control the stock, and keep the feather board guard in place to protect your hands and hold the stock down. Do not shape the end grain of stock less than 2" wide.
- Always feed the workpiece from left to right against the rotation of the cutter. Otherwise a kickback will occur.
- Use a push stick to feed a narrow workpiece. When it is necessary to push a workpiece underneath the feather board guard, use a long piece of scrap wood.
- Avoid taking deep cuts. If the amount of material to be removed is substantial, make more than one pass. Set the fence to make a partial cut and then readjust the fence accordingly to reach the final shape.
- Cut with the grain.
- Do not stand in line with the workpiece being fed. In the event of a kickback you could be hit.
- Feed the workpiece slowly. Use extra care in shaping workpieces that contain figured grain or knots, as these may cause kickbacks.

### **Pin Shaping**

- Always feed the workpiece against the rotation of the cutter, left to right in front of the cutter, right to left if cutting with the rear of the cutter. Otherwise a kickback will occur.
- Always use at least one push block to help control the workpiece. Use two if possible.
- Always use the left starter pin. Use the right pin whenever possible.
- Hold the workpiece firmly against the left starter pin and feed the workpiece slowly into the cutter.
- Internal shaping, i.e., the shaping of the edge of a hole or small opening (less than 6" in diameter) in any shape, should not be attempted.



**Figure 9-3.** Three-lip shaper cutters are available as combination cutters, full-profile cutters, or insets that form the mating parts of a particular joint. \*Warning: Always use the fence assembly when using these cutters that remove the entire workpiece edge.

## SHAPER CUTTERS

Attempting to maintain a complete assortment of cutters can be expensive. A careful selection of from ten to twenty shapes (Figure 9-3), picked for the type of work you do, is adequate. With a basic assortment on hand, you can always add a new cutter as the need for it arises.

Probably the most practical type of shaper cutter for home workshop use is the three-lip shaper cutter shown in Figure 9-4. This type of cutter is available in a great variety of shapes: some are combination cutters, others have a profile that will produce a particular shape such as a tongue or groove. Other shaper cutters come in sets so mating parts can be cut (Figure 9-5).

The shaper arbor holds standard shaper cutters and collars (Figure 9-6). The arbor is locked firmly in place by securing its setscrew against the spindle's tapered flat. The collars are used for depth-of-cut control and for cutter spacing. The cutters and collars are secured to the arbor with a nut. Be sure the nut is tight before starting the operation.

When positioning for cutter height, make the major adjustment by raising or lowering the table. The final setting is made with the quill feed lever. On shaping operations, especially at high speeds and on hardwoods, quill extension should be held to a minimum.