

Figure 7-31. To a limited extent, the v-block setup can be used to drill angular holes in square workpieces.

It is good practice to work with a leveling block when the angle you need is sharp (Figure 7-32). On such work, the side of the bit may contact the work before the point does. This can cause the bit to drift off center. The block, when it is used as shown in Figure 7-33, establishes a center for the bit even before it touches the work, thus assuring that the hole location will be correct.

V-Block Drilling

The table and fence can be situated as shown in Figure 7-34 when you need to drill diametrically into or through round material. Tilt the table to 45° and then adjust it and the fence position so the point of the bit will exactly bisect the "V." If you need more than one hole on the same centerline, mark the workpiece so the bit point can be correctly positioned each time. For through holes, line the "V" with lengths of scrap wood. The same setup and procedure can be used when you need to drill holes in the corners of square stock (Figure 7-35). Make the initial contact slowly and carefully so the bit won't move off center.

DRILLING USING SPECIAL SETUPS

Whether you are doing production work or simply wish to reduce layout functions on a single piece while still achieving accuracy, you

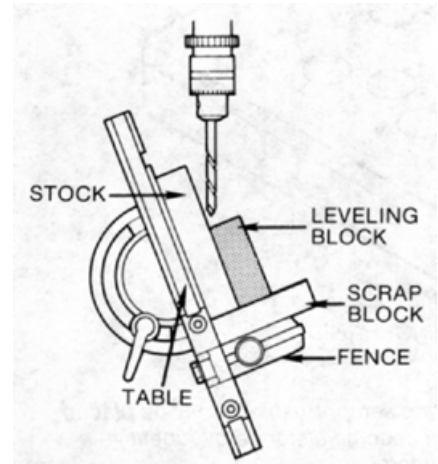


Figure 7-32. On sharp angles, the side of the bit may contact the workpiece before the bit center does. This can cause the bit to drift off center. A leveling block will solve the problem.

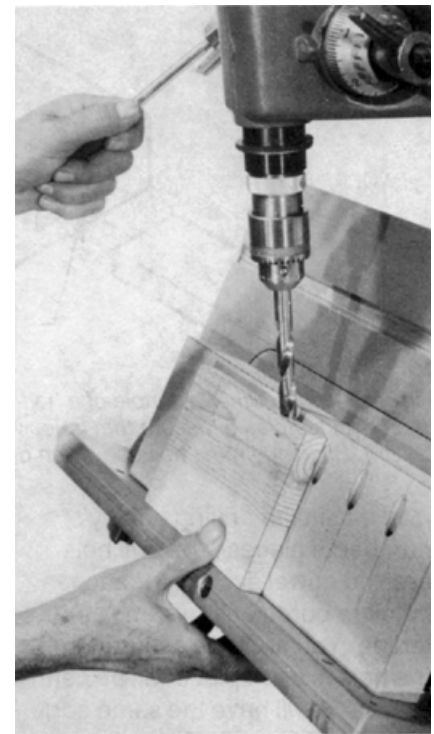


Figure 7-33. The point of the bit will contact the leveling block before it touches the work. Thus it can't move away from where you want it to drill.

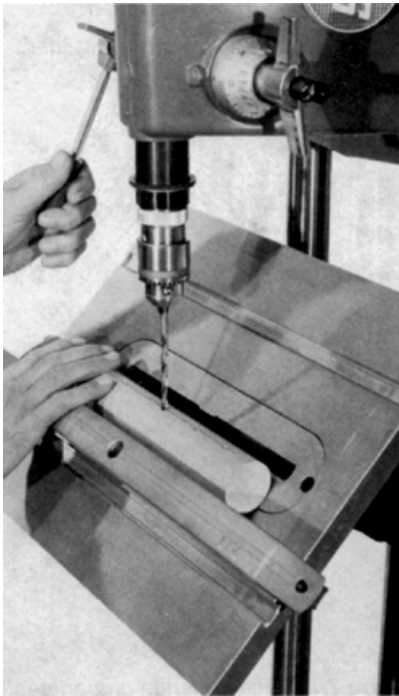


Figure 7-34. The table and the fence, positioned this way, make a perfect V-block for holding a workpiece that requires diametrically accurate holes. Line the “V” with scrap blocks when drilling holes through the workpiece.

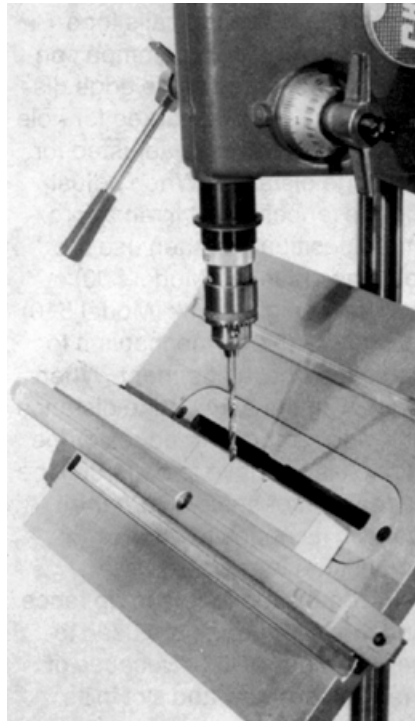


Figure 7-35. The V-block arrangement is also suitable when you need holes in one or more corners of square material. Feed the bit very slowly when you make initial contact.

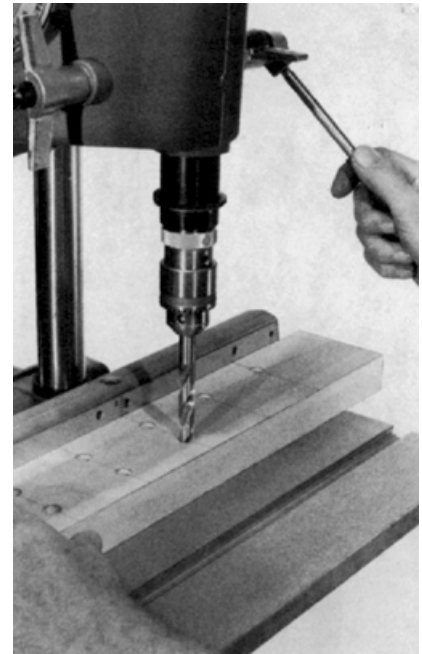


Figure 7-36. The rip fence guarantees all holes will have exactly the same edge distance.

can work with setups using Mark V accessories or others that you invent to suit a particular application.

A basic setup, one that is needed quite often, is demonstrated in Figure 7-36. The job calls for a series of holes on a common centerline to have the same edge distance. The work is marked for hole spacing; the fence is adjusted for the edge distance. When adjusting the fence, lock it in an approximate position and then use the table height lever (Model 500) or the table height crank (Model 510) as a forward feed mechanism to make the final adjustment. When holes with the same edge distance are required on both edges of the stock, all you have to do to drill the second set of holes is turn the work so its opposite edge is against the fence.

In some situations, the rip fence and the miter gauge are used together (Figure 7-37). Because of the special screw and slot in its bar, the miter gauge's position can be secured without the use of clamps.

Even small pieces, like round pieces of dowels, can be organized for similar drilling on any number of pieces. The drill hole and the dowel accommodation hole are bored on the same centerline. You are then assured that the hole in each piece will be centered and will have the same edge distance (Figure 7-38).

Another example of a hole locating setup is shown in Figure 7-39. The design depends, of course, on the work that must be done. Using bushings will assure that the guide hole or holes will not become distorted by repetitive drilling.

Using a Hole-Spacing Guide

If you make the hole-spacing guide that is shown in Figure 7-40, you will be able to accurately drill a series of equally spaced holes, all with the same edge distance, without having to do layout work. The fence is locked in approximate position and the table is adjusted so drilling will occur on the centerline of the workpiece. After the first hole is drilled, the guide is adjusted so the guide pin will engage that hole and position the workpiece for the next hole. The procedure is then repeated—drill a hole, lift the guide pin so you can reposition the workpiece, insert the guide pin in the last hole, and position the workpiece for the next hole (Figure 7-41).

The guide is made by following Figure 7-42. The large holes are for the post—either the mortising holddown post or 5/8" diameter bar stock—that is secured to the rip fence (Model 500) or a fence extension with a hole drilled in the top (Model 510). The small holes are for the guide pin. The guide pin is 1/4" dia. so you can only drill 1/4" dia. holes, but this is not a limitation. If you need larger holes, mount the proper size dowel to the end of the guide pin to enlarge it to the proper size.

Indexing

When you need holes that must be equally spaced around a circumference and have the same distance from a center, you can work accurately by using a pivot guide as shown in Figure 7-43. The guide is a table slot size strip of wood with a small nail driven through it that projects just enough to seat in the stock. The guide is clamped in place and the table is adjusted so the distance from the pivot to the center of the bit equals the radius you need. The distance between holes is determined by laying out equally spaced segments. Caution: If the project calls for through holes, mount a piece of plywood to the guide strip to back up the bit.

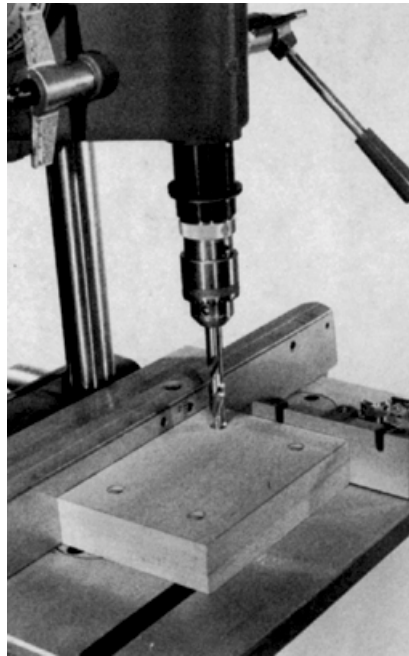


Figure 7-37. An example of how the rip fence and miter gauge are used together. Since the miter gauge has its own lock screw (in the bar), it doesn't have to be clamped.

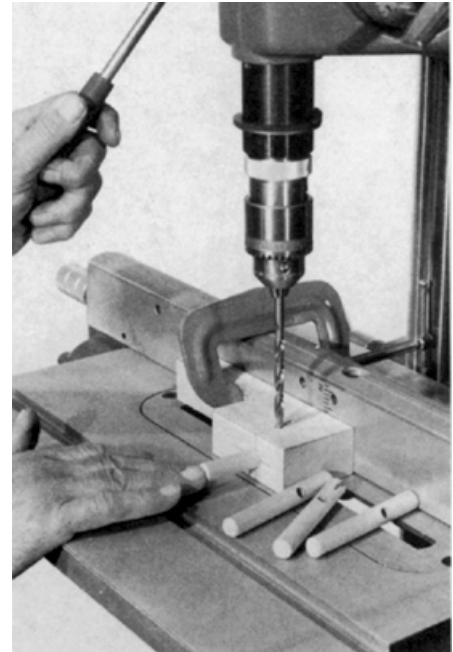


Figure 7-38. Setups are invented to suit particular applications. Once this setup is made, any number of pieces can be accurately drilled.

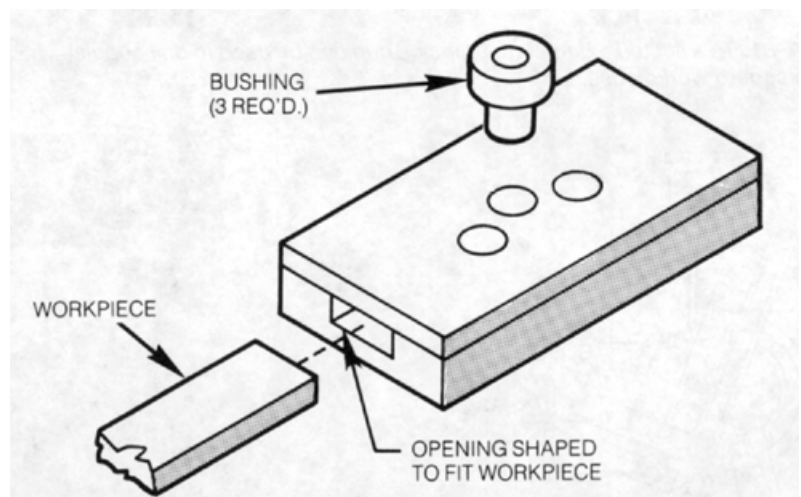


Figure 7-39. Another example of a hole locating setup. Bushings may be placed in drill guide holes to assure that holes will not become distorted by repetitive drilling. Bushings must be used when drilling metal.