

# Hinge Butt Mortising Templates

The perfect tool for a quick and accurate hinge job:  
a product comparison

by Stephen Suddarth

**T**he sweet smell of ponderosa pine filled the room as Howard, my boss and teacher, deftly routed the mortises for door hinges. He was using an old router and an ancient-looking device tacked to the door jamb, a contraption of metal rods and plates with lots of thumbscrews. I was watching, for the first time, a hinge butt template in use.

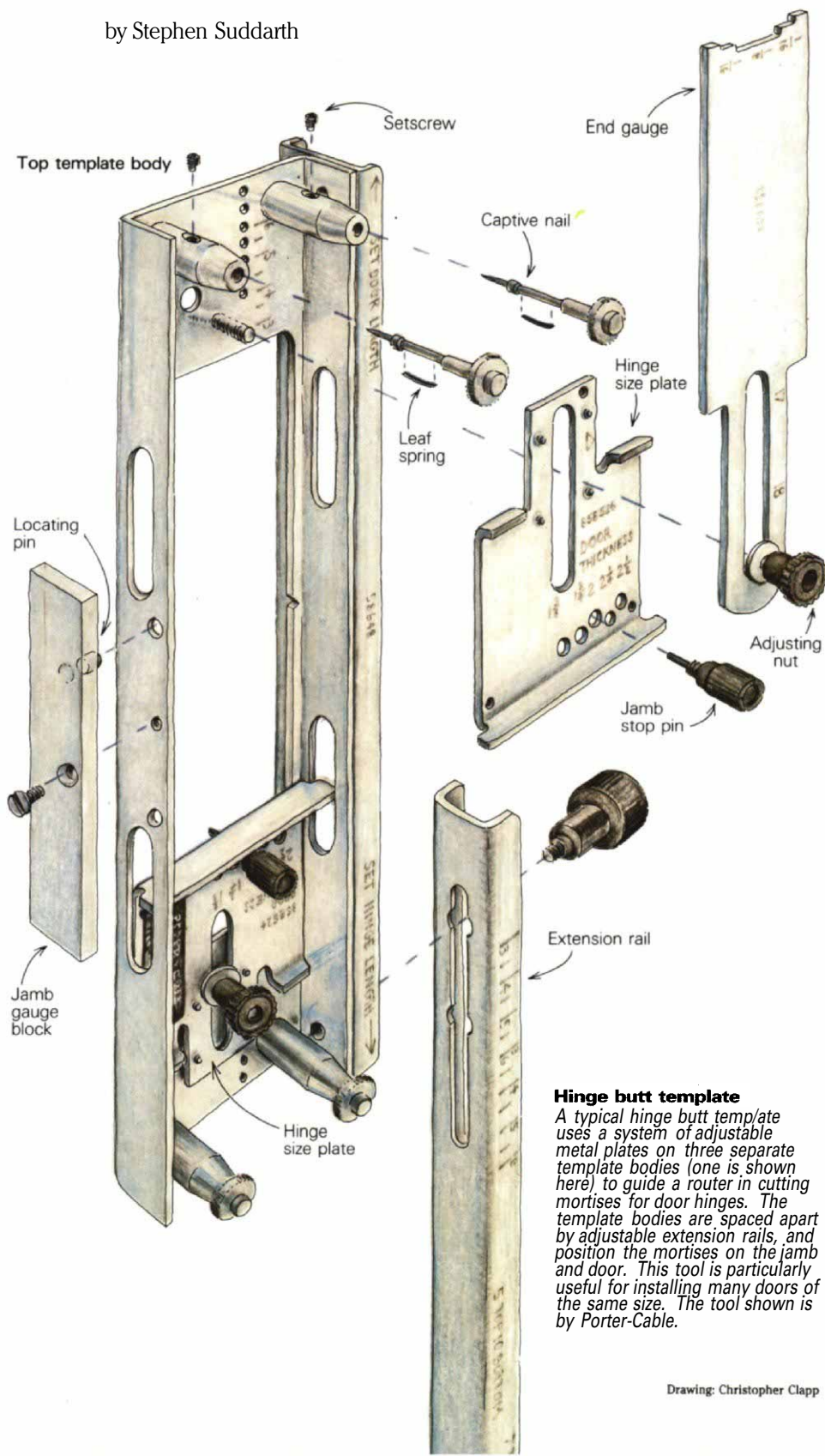
As we moved from doorway to doorway through the custom home we were building and I carried a door to each opening, Howard set the template nails, quickly routed the jamb and door, and offered advice to me every so often in his own quiet way. Soon the mortises were cut for doors throughout the house, and Howard left as I began screwing in hinge leaves. I remember being surprised at the speed with which he worked, particularly since it had taken me what seemed like days to set all the jamps.

That happened years ago. Now, as a building contractor, I have to hang all sorts of doors, and usually within strict time constraints. Once I hung 8-ft. tall oak church doors in the morning and spent that afternoon hanging a number of interior residential doors. On a day like that, a hinge butt template can make the difference between getting home in time for supper or snarling at the dog when you finally arrive home around midnight.

A good template will give you a dependable and versatile way to do the trickiest part of hanging a door: cutting the mortises. Templates will work for most interior and exterior doors, and I've found mine to be an invaluable aid for saving time and ensuring accuracy. Just as important, it gives me the confidence to tackle a demanding job without balking. In fact, I don't hesitate to use the template even if I have only one door to hang.

**Basic template anatomy**—A hinge butt template (some manufacturers use the term "butt hinge template") is a tool for spacing, sizing and guiding the cutting of hinge mortises in doors and door jamps. Since the templates are basically router accessories, it's no surprise that the major manufacturers of hinge butt templates also make routers. These companies each make one version of the tool except for Bosch, which offers two.

All the templates I've seen are similar. They consist of three metal template bodies arranged along adjustable extension rails. A separate one or two-piece collar (usually called a template guide or guide bushing) attaches to the base of



## Hinge butt template

A typical hinge butt template uses a system of adjustable metal plates on three separate template bodies (one is shown here) to guide a router in cutting mortises for door hinges. The template bodies are spaced apart by adjustable extension rails, and position the mortises on the jamb and door. This tool is particularly useful for installing many doors of the same size. The tool shown is by Porter-Cable.

the router and guides the router bit within a space in the template body.

The action happens at the template bodies—the extension rails space them along the jamb or door. Each template body incorporates metal hinge size plates, usually tightened with thumb-screws. They slide toward or away from each other, and are easily set to match the length of hinge you need. On the template bodies are adjustable stop pins that rest against the edge of the jamb or the face of the door. They ensure that the template is properly positioned and will produce a mortise of the correct width.

Once the template is set for the mortises you wish to cut, it's temporarily fastened to the door or the jamb with captive nails, pins or clamps, depending on the manufacturer. These hold the template sections securely to the surface; the small holes they leave in the woodwork can be concealed with a bit of wood filler.

When you purchase a template, you also get the guide bushing to fit the base of your router. The bushing is a metal sleeve through which the router bit extends. When the router base is held in cutting position against the hinge butt template, the outer surface of this sleeve rides against the inner edges of the hinge size plates, and guides the router bit. Since each template is designed for a guide bushing of a particular outside diameter, you have to make sure that the bushing and the template match. Some routers won't accept certain guide bushings without modification. To see if your router will work with one or all of these templates, check the chart below.

When you purchase a hinge butt template, you'll have to put it together. This will take you anywhere from five minutes (Bosch) to ninety minutes (Skil). Instruction booklets range from cryptic to complete, but it's not a big deal to assemble most templates. Some carpenters even partially dismantle the tool between jobs and store it in the box it came in. I prefer to keep mine fully assembled and set up for the size of doors I usually work with. The whole assembly is only about 6 ft. long, and since it's pretty slender I never have any trouble tucking it away in my van. Because I don't take it apart, I don't have to spend time putting it together when I get to the job site, and the parts don't get lost.

**Routers and router bits**—Hinge butt templates require the use of a special two-flute hinge-mortising router bit. These bits are avail-

able in high-speed steel or carbide-tipped versions. With two cutting surfaces, the bit's special configuration leaves the floor of the mortise with a smooth finish. Another characteristic of these bits is their longer-than-normal shank, which gives them extra reach to extend through the hinge butt template.

A ½-in. bit is generally used, though bits are available from ½ in. to 1 ¼ in. The size you choose depends in part on the type of hinges you're using. With square-cornered hinges, the smaller bits leave less material in the corners of the cut, so you'll have less to clean out with a chisel. If you're installing hinges with rounded corners, choose a bit that best fits those corners. Bits are available to match the radius of most round-cornered hinges (a ½-in. bit for hinges with ¼-in. radius corners, for example).

The template sets I've seen all come standard with a high-speed steel hinge mortising bit, but if you want a carbide-tipped bit, you'll have to shop around—many suppliers don't carry them as part of their regular stock. When I used high-speed steel bits, the first ⅛ in. or so of cutting edge was quickly dulled, probably because of heat buildup. So now I use only carbide-tipped mortising bits. Both types of bits are available from router manufacturers.

I have found several good routers for hinge mortising. The Bosch #1601, the Black & Decker #3310 and the Porter-Cable #690 are comparatively light in weight and have good service backup. They're not the only routers you can use, but they are heavy-duty machines that are well suited to the purpose. Hitachi and Makita have guide bushings that fit the templates I tested, but I haven't tried them yet.

**Setting up**—In new construction, once the jambs are installed, doors can be cut to length, edges can be eased, and the doors can be taken to the proper openings. At this point, I always check the plans and door schedules again, especially if I have a question about hardware, hinge specs or whether the door is to be right-handed or left-handed (see *FHB* #26, pp. 26-27).

Door hinges are traditionally installed at certain heights. The top edge of the highest hinge is usually 5 in. to 7 in. below the top of the door, and the bottom edge of the lowest hinge is usually 11 in. from the floor. If a third hinge is used, it's placed halfway between the others.

In laying out the hinges, I've found that mistakes are minimized when I mark the location of

a hinge on both the door and the jamb. Then I can step back and double-check my work before any cutting is done. I put an X in a hinge-sized rectangle about where the top hinge will go. Once I've marked the door, I turn it over and bevel its lock edge at a 5° angle with a power planer. Returning the door so its hinge edge is up, I mark the depth (thickness) of the hinge leaf on it with a sharp pencil or a knife, and then do the same on the jamb. When the template is in place, I will use this line to set the depth of the router bit. The bit depth has to be set only once for all the hinges of a given thickness that you plan to use.

**Mortising the jambs**—I set up the template assembly on the jamb first. I know that many carpenters cut their door mortises first, but I've found that if anything goes wrong, it usually happens on the first cut, and I'd rather make that mistake on the jamb than on a door; it's often cheaper and easier to replace a jamb. Also, a small test cut on the jamb can be easily and unobtrusively filled, while the patch is more likely to show on a door.

The only measurements you'll need are the thickness of the door, its height and the hinge size. Once you have these, you can put your tape measure away, because each template incorporates a system that allows you to set the hinge sections without measuring. You just slide each hinge section to a scribed mark on the extension rail and tighten it down. These settings correspond to standard hinge sizes. Most of the templates are easy to set up, usually taking me about five minutes to adjust to a new setting.

Setting up the template on the jamb is fairly straightforward. If the door stops are already on the jambs, there's no need to remove them—the templates can be adjusted to work around them. Stand in the doorway facing the hinge jamb, and place the template assembly against the jamb. Slide the template up until the top gauge touches the head jamb, then move it in toward the centerline of the jamb until the edge guides touch the jamb edge. With your hammer, drive in both pins on the top template body, and do the same with the center and lower template bodies (if you have a template that uses clamps, tighten those instead of nailing).

Now is a good time to check the templates—they must be tight and flat against the jamb. If you're hanging interior doors with only two hinges per door, you might want to stick a piece

**Capacities of some hinge butt mortising templates**

Brand	List price	Hinge sizes*	Door heights	Door thickness	Collet fits these routers
Black & Decker 58129 2-pc. guide ⅝ in. o.d.	\$175	2½ in. to 5½ in. 2, 3 or 4 hinges	5 ft. 10 in. to 7 ft. 7 ft. to 8 ft. with conversion kit	Up to 2¼ in.	Black & Decker Porter-Cable Milwaukee
Bosch 83037 Bosch 83002 Milwaukee 49-54-0100 1-pc. guide ⅝ in. o.d.	\$168 \$131.60 \$155	2½ in. to 5½ in. 2, 3 or 4 hinges	6½ ft. to 7 ft. 7 ft. to 9 ft. with conversion kit	1⅜ in. 1¾ in. 2 in. 2¼ in.	Bosch Milwaukee
Porter-Cable 59380 2-pc. guide 1⅜ in. o.d.	\$165	3 in. to 6 in. 2, 3 or 4 hinges	6 ft. to 7 ft. 7 ft. to 9 ft. with conversion kit	1⅜ in., 1¾ in. 2 in., 2¼ in. 2½ in.	Black & Decker Porter-Cable Milwaukee
Skil 71022 1-pc. guide ⅝ in. o.d.	\$120	1¾ in. to 5 in. 3 hinges	6½ ft. to 7 ft.	Up to 2¼ in.	Skil

\* These ranges include all standard sizes in between.





**Cutting hinge mortises.** Once the hinge butt template has been set for the hinge size and spacing, lift it into the doorway and slide it against the edge of the hinge-side jamb (top left). At the same time, make sure the top of the template is against the inside of the head jamb. Once it's in position, nail it to the jamb. Attach the guide bushing to the base of your router (center left), and set the depth of cut by holding the router in the template and adjusting the elevation of the bit. Make a test cut to check the cutting depth, and then cut all jamb mortises. The same setup can be used to cut hinge mortises on the door. Kneel on one knee to maintain balance and control while cutting the mortises (below left).

of masking tape across the center hinge section as a reminder not to cut there. The template body can't be easily removed because there's no provision for joining the extension rails directly to each other.

The router you use should feel comfortable in your hands as you work. I wouldn't dream of using my 3-hp production router for hinge mortising. Instead I use a lightweight, no-frills, heavy-duty 1-hp or 1 1/2-hp machine. Attach the correct guide bushing to the router base, chuck a sharp hinge-mortising bit in the router and set the cutting depth. Hold the router in the template and lower the bit to the mark you made previously on the jamb. When you have the right depth and the setting has been tightened, hold the router in the template, turn it on and guide the bit into the edge of the door. I like to make a quick test cut before routing all the mortises, and use the brass sliding section at the end of a folding rule as a depth gauge. Reset the bit depth if necessary, because the appearance of your work will be enhanced by hinges that are flat and flush with the surface of the jamb and door edge.

Once the router is set for the correct depth of cut, position it so that the bit is in the open area of the template body. Switch on the router and slowly move it toward the jamb, making light cuts as you excavate the hinge mortise. I cut the edge of the jamb first to avoid splintering, then finish off the rest of the cut.

Repeat the process at the remaining templates. When you finish a jamb, turn off the router and remove the template assembly by pulling out on the pins with the claw of your hammer.

**Mortising the door**—A door buck will steady the door as you use the hinge butt templates (for more on door bucks, see *FHB* #8, p. 35). Porter-Cable and Bosch both make an adjustable door buck.

With the door secure in the buck, place the template assembly on the hinge edge of the door. A small spacing device at the top of most templates allows you to offset the entire template assembly, which compensates for the clearance between door and head jamb, while ensuring that the hinge leaves will match when the door is hung. The spacer will allow you 1/16-in. clearance (the thickness of a dime) or 1/8-in. clearance (the thickness of a nickel). Here in humid south Florida, I find that 1/8-in. clearance is the safest bet.

If there were ever a time for concentration, this would be it. It's real easy to cut the mortises

into the wrong face of the door (and real embarrassing when you do). Make sure the edge stop on the template is tight up against the door. Once you're satisfied that the template is in position, carefully drive the pins home one template body at a time, as you did on the jamb. It doesn't hurt to check that router-bit depth once more, either. Then rout the mortises.

**Hanging the door**—When all the mortises are cut and the template assembly has been removed from the door, it's time to install the hinges in the jamb and the door. Then stand the door upright and set it in the opening with the hinge knuckles facing you. Slip the top hinge leaves together first, holding the door with the toe of your boot at the bottom and one hand near the top. Reach in your pocket or nailbag for the pin and drop it in the hinge barrel. Follow with the bottom hinge, then the center hinge. Placing the top hinge pin first will hold the door in position until you can put the lower pins in place. This may save you from crushing your fingers or from damaging the work you've just done. Tap the hinge pins partway down, leaving them extended about 1/2 in. Take a quick look at the door's fit, and if it looks good, tap the pins home and go on to the next door.

**Templates available**—I tested hinge butt templates by Black & Decker, Bosch, Milwaukee, Porter-Cable, and Skil (photo facing page), and they're not exactly cheap. But if you install doors on a regular basis, then it's costing you money not to use one. I've cut hinge mortises by hand (as in *FHB* #8, pp. 34-36), with site-built jigs (as in *FHB* #26, pp. 26-32) and free-hand with a router, and in terms of productivity, my hinge butt template has made far more money than it ever cost. You can do more work in less time with the tool, and that alone makes it worth the price.

As far as I know, Makita, Ryobi and Hitachi don't make hinge butt templates. They do, however, offer guide bushings that fit some of the templates noted below. Here's what I've found about the templates I tested:

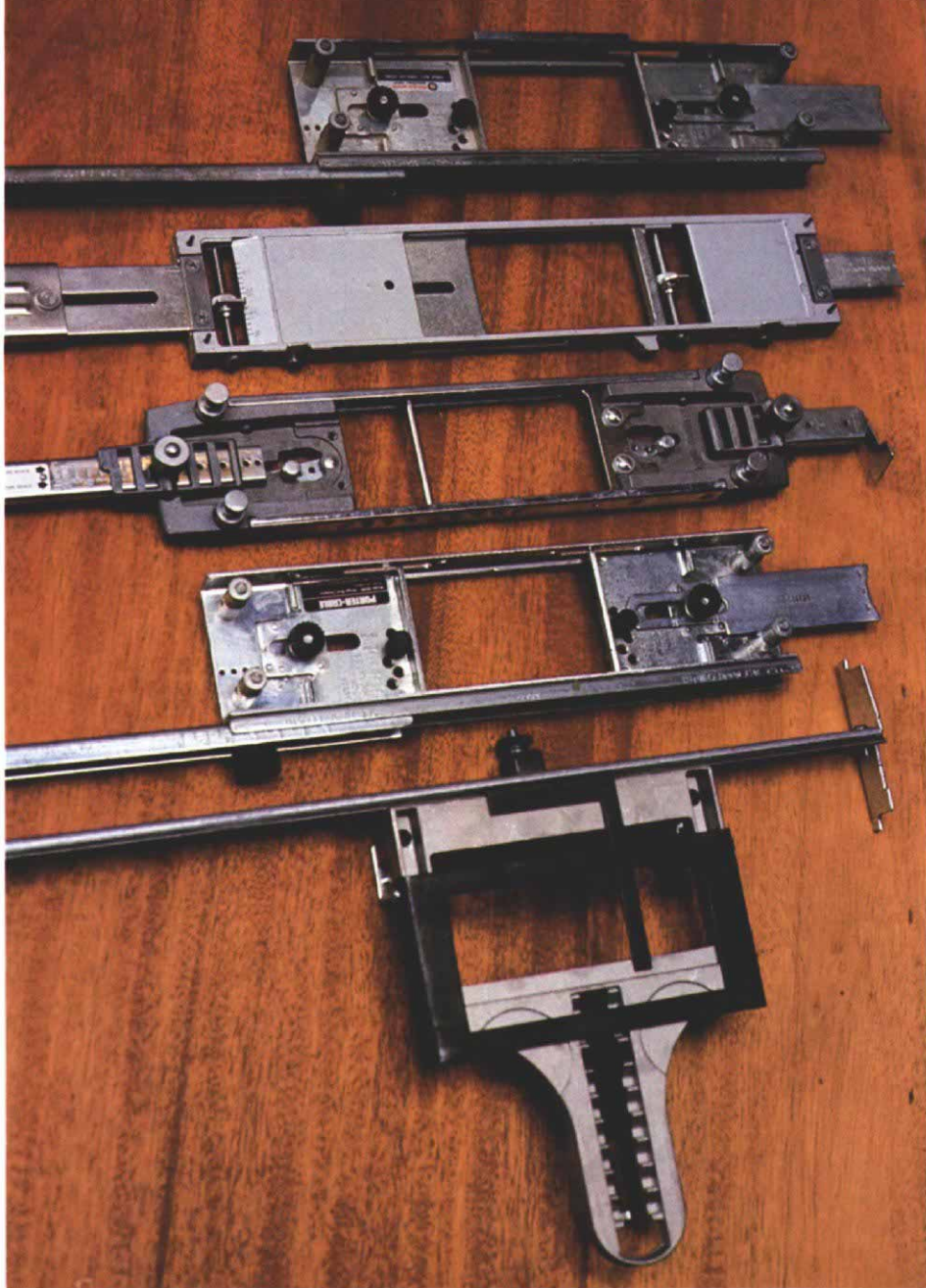
**Black & Decker model 58129.** The Black & Decker, with cast-aluminum template bodies and formed plated-steel guide rails, is fairly light in weight at about 4 1/2 lb. I found it easy to put together. To set up for routing, you have to finger-turn six knurled nuts in order to adjust for the thickness of the door. Once set up, though, the clever design of the template lets you flip it front to back for routing doors and jambs without changing the setup. It's fastened to the jamb with flat-tipped nails that make smaller holes in the workpiece. The tops of the template body castings were a bit rough to ride over with the router, so I had to file them slightly to get a smooth surface.

The Black & Decker is the only model I tried that includes metal gauge blocks that allow you to match the template to existing jamb mortises, like the ones you find on metal jambs or in remodeling work. It also comes with a metal case and a corner chisel.

**Bosch 83037.** This is my favorite. It's a refined and sturdier version of the old Stanley template,







From bottom to top in the photo above, the hinge butt templates are: Skil, Porter-Cable, Bosch 83002 (identical to the Milwaukee), Black & Decker and an old Rockwell. Not pictured is the Bosch 83037, which is identical to the Bosch 83002 except that it is a heavier-duty tool. Sears offers the Skil template under its Craftsman label.

which is no longer produced. Carpenters who have used the Stanley told me that it was a bit on the fragile side, and didn't take well to knocks and bumps. But with its strengthened extension rails, the Bosch should hold up. At 5¼ lb., it's the heavy-duty model of the two Bosch templates. It was the easiest of all the templates to assemble, and the only one with spring-loaded nails that retract when they're not holding the template to the jamb. That's a nice feature, since the nails on other templates can scratch woodwork if you don't retract them entirely before carrying the tool from one jamb to another.

The 83037 has excellent balance and adjusts easily to different door thicknesses. The hinge size is easier to set than on other templates, but this adjustment requires using a locating pin that can get lost if you happen to drop it in a pile of sawdust. One thing I really like about the 83037

is that it allows you to make fine adjustments of the hinge gauge. I've found lots of hinges that are slightly off-size, especially solid brass hinges, and this adjustment lets the template change slightly to match that difference. Unfortunately, however, there are no graduations on the hinge guide that allow you to find a previous setting, so I scribed a mark on the cast-aluminum guide before adjusting it. Other than that, the 83037 is nearly foolproof in use. Metal gauge blocks are available as an accessory.

**Bosch 83002.** This is a lighter-duty version of the 83037. There is no provision for attaching metal gauge blocks to the edge. The 83002 weighs about 4¾ lb. I'd definitely go to the 83037 for production work.

**Milwaukee 49-54-0100.** The Milwaukee has exactly the same features as the Bosch 83002. It even looks exactly like the Bosch 83002, except

that it comes in a red metal case instead of a blue one. That's because Bosch makes them for Milwaukee. I was a bit surprised to find that Milwaukee offers only the lighter-duty model of the Bosch line, though.

**Porter-Cable 59380.** With its plated all-steel construction, this is the heaviest template at over 7 lb., and is probably the most durable. I think it runs a close second to the Bosch 83037 in overall utility. Part for part, it's exactly the same tool as my Rockwell 59380, which has been in use for almost ten trouble-free years now. It's the only template that can accommodate, without modification, the largest bits generally available for hinge mortising. Placed on the inside of the template sections, the optional metal gauge blocks become spacers to allow for weatherstripping on exterior doors. One minor problem with the tool is that the extension rails, even when well tightened, don't seem to hold the template completely straight. I found that I always had to lightly spring the unit straight on the door or jamb before driving the nails.

**Skil 71022.** This template functions in a completely different way from the others, but its innovations aren't necessarily improvements. Assembling it was difficult, and trying to use it was awkward. Because it has to be adjusted for each hinge, changing a setup takes about fifteen minutes, compared to five minutes for the other templates. But a couple of good ideas are evident in its design. Since the hinge gauge adjusts to the actual hinge itself, irregularities in the size of each hinge are automatically accounted for. The cast-aluminum template bodies clamp to the door and jamb, instead of having to be nailed. If I owned a Skil template, I'd leave it set up for the most common type of door I encountered and use it only for that. This would get around the difficulty of changing the settings.

**Template accessories**—If you're buying a hinge butt template, do yourself a favor and get the jamb gauge-block set as an accessory. You'll find it very useful on door replacement jobs, when you have to match door mortises to pre-existing jamb mortises. The gauge blocks allow you to index the template setting to the existing mortises. On commercial construction, you'll often have to hang wood fire doors in metal jambs, and the gauge blocks are helpful here, too. You'll need a set of blocks for each size of hinge you use. The Bosch 83002 can't use gauge blocks, nor can the Milwaukee or the Skil.

Hinges with rounded corners appeared after carpenters and millwork shops began using routers for cutting hinge mortises, and now you see them everywhere. Some people still like square-cornered hinges. I find the small corner chisels offered as an accessory with some templates (with Porter-Cable and Bosch) really handy to pop those corners out of router-cut mortises.

Black & Decker, Porter-Cable, Bosch and Milwaukee offer accessory packages that allow you to use the hinge butt templates on unusually long doors. These packages include an additional extension rail and a fourth hinge section.

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