



Build a Plane From a Kit

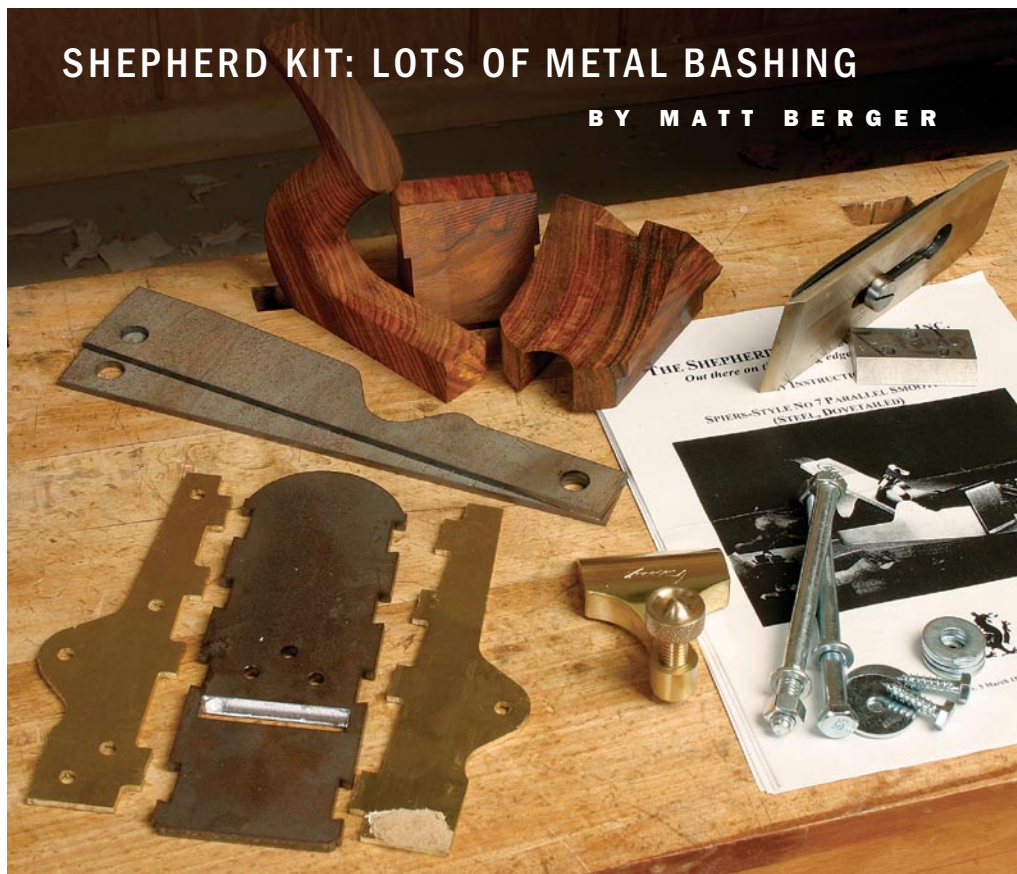
Two editors find the labor
intensive but rewarding

The idea of building a plane from a kit of parts began when Doug Evans and Ben Knebel of the Shepherd Tool Co. stopped by the *Fine Woodworking* office. They had a compelling sales pitch: Anyone could build a plane in a matter of hours, no metalworking experience required, and the finished planes would outperform the best ready-made planes.

Intoxicated by the idea of planing see-through shavings from the gnarliest of boards, two editors took the bait. To make the test more interesting and fair, we compared kits from Shepherd and the St. James Bay Tool Co. in Arizona. Both also sell finished planes. To prevent special treatment, we used personal credit cards to order the planes and had them shipped to the editors' homes.

SHEPHERD KIT: LOTS OF METAL BASHING

BY MATT BERGER



Assembling this kit was an exercise in metalworking. The 20-odd pieces had to be shaped precisely with files and fitted together with an ear-numbing amount of hammering. The only woodworking was sanding and finishing the pre-shaped infill parts.

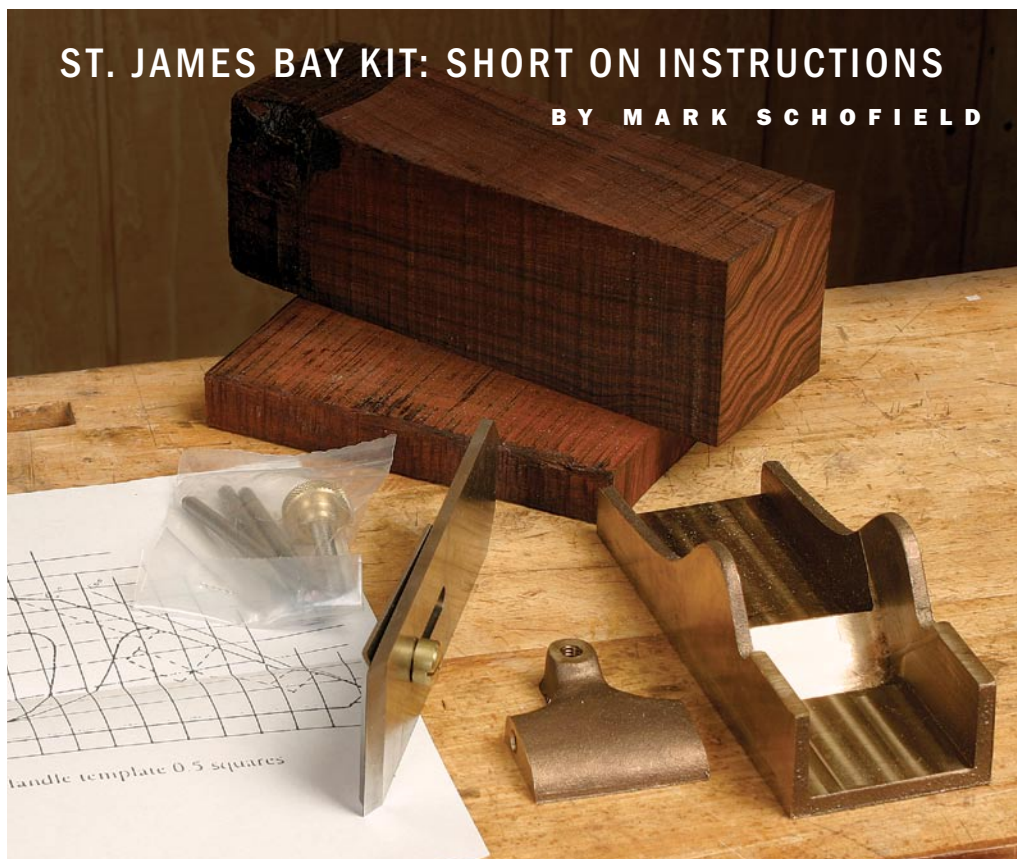
Despite this, familiarity with metalworking was not required. All the techniques were well described in the 30-page manual, and none were beyond the reach of the average woodworker. What I couldn't glean from the manual I often found by browsing Shepherd's Web site, where I turned often during the 40 hours I toiled away on the project (the company estimates you'll need 8 to 10 hours). If you call the company for advice, prepare to wait a few weeks for a response.

Metal dovetails differ from wooden ones—The most challenging aspect of

The Shepherd kit. The metal sides and sole of the plane are joined with dovetails that must be hammered together. The wooden infill parts are pre-shaped.

ST. JAMES BAY KIT: SHORT ON INSTRUCTIONS

BY MARK SCHOFIELD



After comparing the parts for the two kits, I thought that I definitely had the easier task: The body of this plane was in one piece and there were some nice chunks of cocobolo waiting to be custom-shaped to fit my grip. But I was annoyed to discover that the instruction booklet had been left out, and the only aid was a template for cutting the handle.

Getting to know Bob—I called Bob Howard, the owner of St. James Bay, who informed me that there were no instructions because many buyers like to customize the kits.

"So Bob," I asked, "what about mere mortals whose only goal is to build the kit?"

Bob explained that the basic procedure is to work forward from the back of the plane: Fit the rear infill; extend the bed angle; file the mouth and fit the blade;

The St. James Bay kit. The metal body comes as one piece. The wooden infill parts must be cut from two pieces of cocobolo.



Pounding metal. Using a wooden jig resting on an improvised anvil, the author joins the dovetails together with a ball-peen hammer.

THE SHEPHERD KIT (continued)

assembling the plane was joining the sole to the sidewalls with compound dovetails. Both the tails and pins are pre-cut but must be beveled and tapered, requiring precise filing before I joined them by methodically hammering the parts until the metal flowed together to create a locking joint.

Aside from ensuring the integrity of the plane, quality work is essential to

I AM VERY HAPPY WITH THE FINISHED PRODUCT, AND KNOW THAT I HAVE A TOOL THAT I WILL USE FOR THE REST OF MY LIFE.

the finished look of the dovetails. This is particularly important when assembling a plane body from steel and brass, as the contrasting colors will highlight flaws. In retrospect, I should have spent more time fitting the pins and tails before I hammered the parts together. This stage was mostly thankless work, even discouraging at times with bulges of metal all over the place.

The infill should fit snugly—The kit came with a pre-shaped infill, but the instructions also detail how to make your own and provide a basic pattern. The pattern likely would ensure that the infill exactly fit the body; my pre-shaped handle and bun were about 1/32 in. too narrow. I could have shimmed the infill, but I chose to bend in the sides. I don't intend to use

the plane on a shooting board, so I can live with the sides about 1° out of true. Grinding them back perpendicular to the sole would have been a vast amount of work.

Fit the mouth and file the parts—I had to do a lot of filing to get the mouth, throat plate, and rear infill to align at 45°. This was mainly because Shepherd mistakenly included a 47½° throat plate, a flaw I didn't discover until the part was locked

THE ST. JAMES BAY KIT (continued)

and finally, fit the front infill. In the end, I found Bob not only charming but very helpful and accessible.

The next day I found that both sides of the plane body were tilted so far inward that the lever cap would not fit into the body. Bob sent out a replacement part whose sides were perfectly perpendicular to the sole.

THE PLANE CUTS LIKE NO OTHER I'VE USED AND I'M PROUD TO OWN IT. BUT IN THE FUTURE, I'LL STICK TO MAKING FURNITURE, NOT TOOLS.

Making the cocobolo infill—The rear infill consists of a handle and two side pieces. At Bob's suggestion, I made trial pieces out of poplar to get the correct size and to find the most comfortable handle shape. Once satisfied, I sliced into the two pieces of cocobolo. Working from a photo of an old Norris plane, I shaped the side pieces with a router and chisel so that they extended slightly onto the sides of the body,

then thickened the handle until the three-part package slid tightly into the body.

Filing the mouth and fitting the blade—I was terrified of opening the mouth too wide and reducing the plane's ability to work difficult grain. The difficulty is that you must remove the surplus metal on the sides of the throat before you can test-fit the blade, but access to the throat requires that

you open the mouth. After much filing and fitting, I ended up with a mouth that, while not perfect, was very acceptable.

Insert the steel pins tightly—After fitting the front infill, I drilled through the sides of the plane and drove in three 1/4-in.-dia. steel cross pins that secure the front and rear infills and the lever cap. John White, *Fine Woodworking* shop manager and an experienced metalworker, provided me



Opening the mouth. The mouth needs to be filed open very gradually until the blade just has clearance.

into place with steel pins. Check that you have the correct parts before you start.

With the parts fitted, the excess steel around the dovetails had to be removed. The instructions suggested using a belt sander, but once I got into a rhythm I was happy to file by hand. Make sure you have the following new files: a 12-in. mill bastard file for removing excess metal quickly; an 8-in. flat mill bastard file for beveling the dovetails; and a 1/8-in.-thick flat bastard file for working the throat. The only other vital tools are a ball-peen hammer and an anvil or a heavy steel plate to hammer against.

Was the effort worthwhile?—After making shavings with my plane on a piece of figured maple, I am very happy with the finished product, and I know that I have a tool that I will use for the rest of my life. Shepherd has developed a kit that can give a good result if you set your mind to it.

Matt Berger is managing editor at www.FineWoodworkingNetwork.com.

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with a valuable tip here. Instead of using a 1/4-in. bit, which would have resulted in a loose fit, he suggested using a fractionally smaller C bit followed by a hand reamer to create an exact 1/4-in.-dia. hole.

Finish by burnishing and buffing—Bob suggested sanding the cocobolo to P600-grit and then using a buffing wheel. The results were amazing: The wood gleams and has the feel of a smoothly waxed antique. While at the buffing wheel I also burnished the lever cap and the top edges of the body.

I then assembled the plane, inserted the blade and chip breaker, and tensioned the lever cap. With the blade withdrawn slightly, I flattened and smoothed the sides and the sole using emery paper on float glass. Even though the sole came relatively flat, try to pick a cool day for this grunt work.

Was it worth the effort? The plane cuts like no other I've used, and I'm proud to own it. But in the future, I'll stick to making furniture, not tools.

Mark Schofield is a senior editor.

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