Try squares, like the ones shown here, look simple but play crucial roles in my shop. Primarily, they help me determine if something is perfectly square. This could be two parts in a project assembly, or the end of a board. I even use my square to make sure the saw blade is perpendicular to the table.

Another key task is laying out joinery across several parts, as shown in the photo above. You can also use it to accurately transfer a layout mark around all four sides of a workpiece.

Although these are precision tools, try squares are surprisingly straightforward to make in the shop. There are just three basic parts held together by screws and rivets. In fact, with just a few hours of easy effort, you can have a pair of heirloom tools that work as great as they look.

The construction of each square is identical. The dimensions are on the next page. Just follow the step-by-step photos to make your own classic tool.
OVERALL DIMENSIONS:
LARGE SQUARE: 9/16” T x 4 1/4” W x 7” L
SMALL SQUARE: 9/16” T x 2 7/16” W x 4 1/4” L

LARGE BLADE
(1 1/8” x 7” - 5/8” BRASS)

SMALL BLADE
(1/8” x 4 1/8” - 1/8” BRASS)

WEAR STRIP ATTACHED TO HEAD WITH #2 x 5/8” FH BRASS WOODSCREWS

BRASS BLADE FEATURES COVE AND BEAD PROFILE ON END

PILOT HOLE MATCHES SHANK OF FEMALE RIVET

RIVET SECURES BLADE TO HEAD

WEAR STRIP PROVIDES DURABLE EDGE FOR HEAD

NOTE: BLADE FEATURES COVE AND BEAD PROFILE ON END

PHOTOCOPY PATTERNS TO USE IN SHAPING BLADE PROFILES

NOTE: HEADS ARE MADE FROM COCOBOLO

COUNTERBORE HEAD OF RIVET SO IT REMAINS SLIGHTLY PROUD. SAND IT FLUSH AFTERS ASSEMBLY

NOTE: FOR HARDWARE SOURCES, TURN TO PAGE 98

HEADS ARE MADE FROM COCOBOLO

NOTE: SHANK OF FEMALE RIVET IS CUT DOWN TO 1/4” IN LENGTH

PILOT HOLE MATCHES SHANK OF FEMALE RIVET

COUNTERTORE HEAD OF RIVET SO IT REMAINS SLIGHTLY PROUD. SAND IT FLUSH AFTERS ASSEMBLY

NOTE: FOR HARDWARE SOURCES, TURN TO PAGE 98
making the Square

Making a try square isn’t complicated, as you’ll soon see. What it does require is attention to detail in a few key areas.

THE BLADE

The starting point for making the squares is the brass blade. I chose flat bar stock that matched the width and thickness I was looking for. Note that the width of each blade is slightly different. (You can find where to purchase the brass in Sources on page 6.)

Cut to Length. I cut the blade to length at the table saw, as in the upper right photo. While it may seem surprising, the carbide teeth on an ordinary saw blade work just fine on soft metals like brass and aluminum. And a few short cuts won’t dull the blade.

Smooth & Flat. From there, I spent some time smoothing the blade. I applied a strip of self-adhesive sandpaper to the saw table. Take it easy here. Your goal is to simply remove any tarnish and create an even appearance.

You can see in the inset photo that the rip fence is set alongside the sandpaper. It serves as a guide to keep the scratch pattern made by the sandpaper in perfectly straight lines. Sand the blade up to 400 grit.

Traditional Profile. The profile I shaped on the end adds a little visual interest. It’s a good idea to use a scribe to trace the profile (near left photo). This leaves a crisp line to work toward.

Shape the Profile. I used a hack saw to quickly remove most of the waste from the end of the blade.

Refine the Shape. Smooth saw marks with round and flat files. Gradually work your way to the layout marks.

Smoothing Edges. Sand the edges up to 400 grit. The strokes should be along the edge, not across it.

THE HEAD

The other part of the square is the head. It’s a hardwood block with a brass wear strip. The strip provides a smooth, durable surface to ride against the workpiece.

Cut the Blade. A standard, carbide-tipped table saw blade can easily cut the brass bar stock to final length.
Wear Strip. The wear strip is attached to the block with small, brass screws. The trick is keeping these small parts aligned. The solution has two parts. First, start with a slightly oversize wear strip. This way, you don’t need to fuss with a perfect alignment.

The second part is to use super glue to temporarily attach the wear strip. This prevents it from shifting while you drill holes and drive the screws for a permanent connection to the head.

In order to drill consistent holes and countersinks, I used the drill press, as in the upper right photo. Once the screws are in place, you can file and sand the screws and wear strip flush.

Slot. The blade is housed in a slot cut across the end of the head. I did this at the table saw (left photo below). The key is centering the blade on the thickness of the head. Then to add safety and control during the cut, I made a push block to guide the part. You can find the details for the push block on page 5.

Adding Rivets. The blade is secured to the body with three rivets. Before you drill the holes for the rivets, you want to make sure the blade is secure and square in the head.

Here again, you can apply super glue to the blade first. Then install it in the body using a square corner as a form until the glue dries. Once the glue is set, mark and drill the holes for the rivets. You need to trim the female part of the rivet to $\frac{1}{4}$" long so it can seat in the head, as shown in the right margin.

A few taps with a hammer fixes the rivets in place. After final sanding and a coat of oil, the try square is ready for use. For an afternoon’s work, you have a tool that will last a lifetime.

Cut a Slot. A simple push block guides the head to create the blade slot at the table saw.

Make It Square. Glue the blade into the head using a square corner as a reference.

Drill & Countersink. At the drill press, drill the pilot holes and countersinks for the small screws that anchor the wear strip.

Glue It On. To keep the wear strip from shifting, use super glue to temporarily secure it to the handle.

Peen the Rivets. Using the anvil on the back of a bench vise, seat the rivets to permanently secure the blade.

Final Sanding. Apply sandpaper to the saw table to smooth the faces and level the rivets with the fence as a guide.
Push Block

While there isn’t anything complicated about making the try squares, one task does present a bit of a challenge. That’s cutting the slot in the head to hold the blade of the square.

The problem is that the head pieces are fairly small. So I needed a way to hold each piece square to the table while keeping my fingers out of harm’s way. The solution I came up with is a two-piece push block. The drawings at right show how it works for cutting each size of try square.

A wide backer board serves as a handle to guide the workpiece across the blade safely. The leading end holds the head square to the blade. As you can see in the lower right drawing, the backer is sized to match the thickness of the head of the square (9⁄16”). I also relieved the back corner for a more comfortable grip.

The other part of the push block is a hardboard face. Its purpose is to hold the workpiece firmly against the rip fence. I applied a strip of double-sided tape to the backer to keep the part from shifting during the cut.
Project Sources

I purchased most of the hardware needed for the try squares from McMaster-Carr. This includes the 1\(\frac{1}{4}\)" brass (8954K231) and 3\(\frac{1}{8}\)" brass (8954K237), both 1\(\frac{1}{8}\)" thick. You’ll also need 1" brass at 1\(\frac{1}{16}\)"-thick (8951K05). McMaster-Carr also carries the 3\(\frac{3}{16}\)"-dia. (96082A100) and 5\(\frac{3}{16}\)"-dia. (96082A200) rivets that you’ll need.

Manufacturers and retailers will periodically redesign or discontinue some of their items. So you’ll want to gather all the hardware, supplies, and tools you need before you get started. It’s easy to adjust dimensions or drill different-sized holes to suit your hardware.