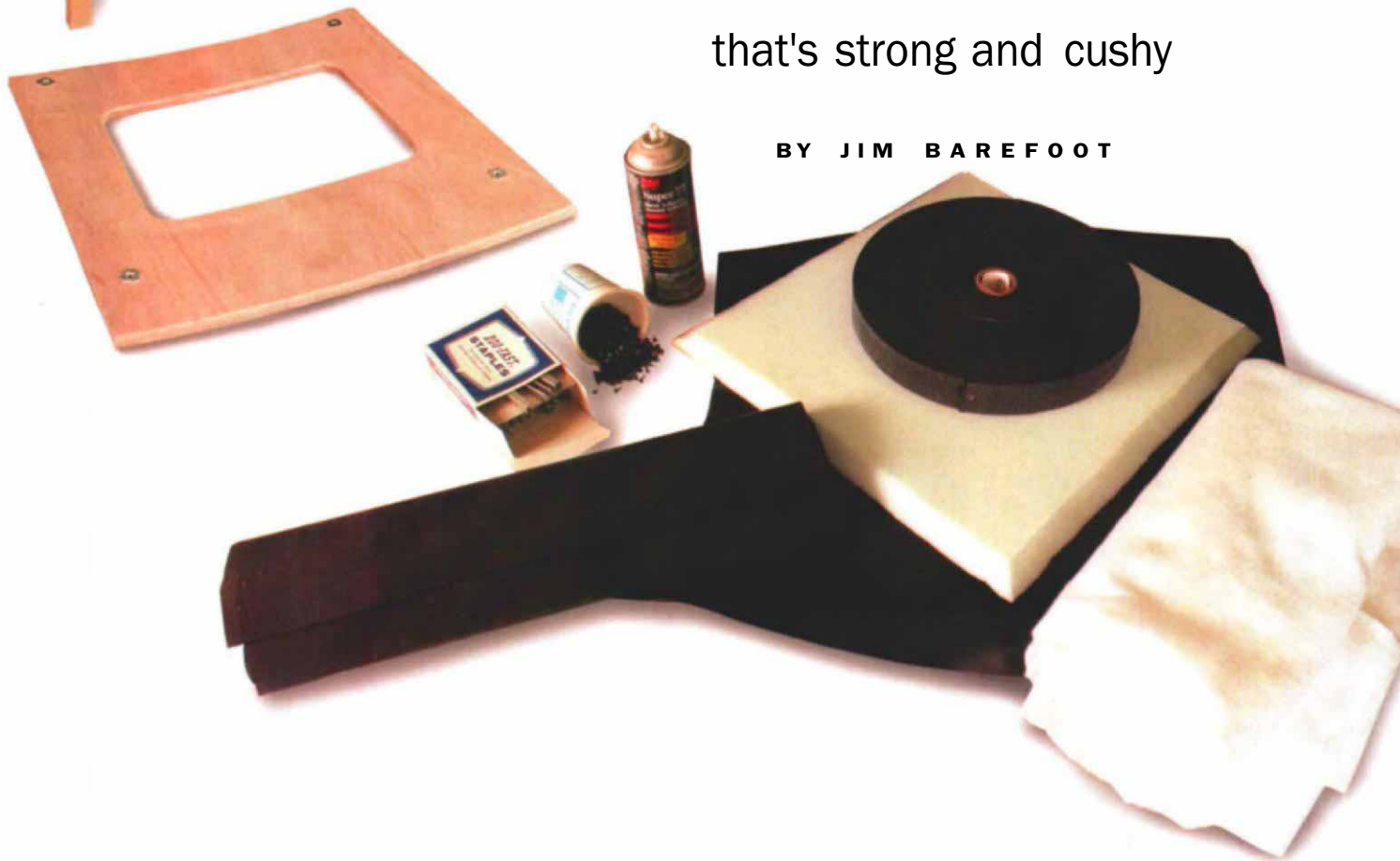




# Make a Comfortable Slip Seat

Tips for a quick and easy approach to build or replace a chair seat that's strong and cushy

BY JIM BAREFOOT



I am not an upholsterer, but I design chairs for a living. And I often build and live with the prototypes for several months before finalizing drawings for a manufacturer. As I work out the kinks, what matters to me most is comfort and strength. Whether you're repairing an ailing antique or building a new chair from scratch, the seat is the point of contact that must absorb considerable stresses.

Many woodworkers are needlessly intimidated by the prospect of applying upholstery. But by using the methods I describe, mak-

ing a slip seat that is both strong and comfortable can be easier than you might imagine. Remember that you may not get the comfort exactly right on the first try, so it's important to be willing to rework it. Also, the process will go more smoothly with the right tools and materials.

## Cut and fit the core of the seat frame first

The slip seat on the chair I designed shown in the photo above is slightly curved and rests on the front rail, level with the side and

## WEBBING, FOAM AND PADDING

back rails. You could just as easily have a flat seat that rests inside the rails all around or on top of all the rails, as it does on many armless side chairs. Keep in mind that you have to be sure you can actually fit the slip seat into place after upholstering it.

Because this seat has a slight curve and does not rest on all the rails, it had to have a strength of its own. So I laminated the seat in a vacuum press from four pieces of 1/8-in. plywood and made a cutout in the middle of the seat where the tailbone will fall.

I put corner blocks in the frame of this chair to strengthen it and to provide support for the seat. Using 1/4-in. machine screws, I drilled holes in the corner blocks to attach the seat later. I placed the plywood seat on the chair frame and marked it to drill holes for T-nuts to hold the machine screws. I rounded over the sharp front edge with a 3/8-in. radius bit so that it won't cut off circulation to the underside of legs. I also rounded over the cutout edges so that the webbing wouldn't get cut or worn.

### Stretched webbing absorbs and releases energy

Elastic webbing is the spring system for this seat. I've used several brands (Pirelli, Intes, Matrex and Ultraflex) with pretty much equal success. The flexibility in the webbing absorbs most of the energy from sitting down in the chair. This eases the load on the foam, so it lasts longer.

I apply the webbing in a basket-weave pattern (see the top photo at right), which distributes the load to all the strands, using 2-in.-wide webbing stapled about 3 in. on center. That leaves a gap of about an inch between strands. The foam can easily span that size gap without any problems. You could mark the spacing for the webbing, but I simply eyeball the locations of the first layer and work from there.

Unroll a few feet of webbing, position it on the seat and drive pneumatic staples or tacks into one end. Use enough staples to catch each elastic strand in the webbing. I drive the staples into the webbing at a 45° angle to the weave, using as many as a dozen staples at each end. Always clamp the plywood seat to the bench before stretching the webbing, or it can quickly flip up into your face.

Pull the webbing fairly taut until you feel the elasticity stop. Pull the webbing out, then down over the edge to hold it in place. Fasten the webbing with staples or tacks; then release the tension and trim it to length. Repeat across the seat. Turn the seat 90°, and lay the second layer in a basket-weave pattern. Don't stretch the second layer quite as tight—just enough so it sounds like a drum. You can vary the spring of the seat by adding more webbing or by not stretching it as tightly. Experiment. Try it out by tossing your foam onto the webbing and sitting on it.

### Firm foam is the best cushion

You can buy polyurethane foam in a wide range of density and stiffness values. Denser foam has less air and more polyurethane to support the load. I look for densities of at least 2.1 lbs. per cu. ft. for slip seats. The stiffness is measured by a ratio called the Indentation Load Deflection, or ILD, which is the measure of the amount of force required to compress the foam by 25%. You have to specify this number when you order the foam. Higher ILD numbers mean stiffer foam. Keep in mind that the thinner the



**Stretch the webbing until you feel it stop.** Ribbons of elastic webbing woven in a basket-weave pattern are what absorb the major stresses on the chair seat.



**Spray adhesive bonds foam to seat.** By lowering the seat onto the foam, you can better control the alignment before the tacky glue takes hold.



**Wrapping edges for a neat look.** After back-beveling the bottom edges of the foam and spraying them with at least two coats of adhesive, the author wraps them to make a neat, soft edge all around the seat.



**Polyester blanket keeps leather from sticking to foam.** This lightweight polyester fiber is applied with spray adhesive and trimmed after wrapping it around the top of the seat.



**Start in the middle.** The author stretches and staples the finish cover (in this case, leather) along the middle of each edge.

## UPHOLSTERING THE SEAT



**Next pull and tack each corner.** Depending on the thickness of the cover material, you may need to fold in a visible pleat at the corners.



**Fill in the border with staples.** Stretch and staple the cover between corners and middle edges. The author is not stingy with staples and tacks.



**Black fabric finishes the bottom of the seat.** Fabric for the underside of the seat is folded and tucked under itself before being tacked into place. Afterward, the author found the holes for T-nut fasteners and snipped cutouts in the fabric as clearance for the machine screws that hold the seat to the chair frame.

foam pad, the stiffer the foam should be. For a  $\frac{3}{4}$ -in. or 1-in. seat, I use foam with an ILD of 65 lbs.

Using an electric carving knife, I cut the 1-in.-thick foam for this chair about  $\frac{3}{4}$  in. larger than the plywood core on all four sides. I cut the edge at a  $45^\circ$  bevel, with the bevel facing down, and use 3M Super 77 spray adhesive to attach the foam to the plywood. Spray the adhesive lightly in the middle of the seat—webbing included—just to tack the foam down; then spray the edges well, even twice. Let that dry until tacky, and press the edges of the foam into place.

For a little extra cushion, I put a layer of polyester fiber, or quilt batting from a fabric store, over the foam (see the bottom photo on p. 87). Besides making the seat a little more plush, the polyester

fiber relieves the friction between foam and leather. It will also help to keep bumps or edges from telegraphing through the leather.

### Stretching the finish cover

Every upholsterer has a preferred method for how to apply a fabric or leather cover to a slip seat. Here's one that works for me (see the photos above). Center the cover on the seat, flip the seat over and baste-tack the front in the center. Then pull the cover snugly to the rear, and tack that edge in the center. Do the same side-to-side, making sure the fabric pattern is correctly aligned. Then pull and tack each corner. Work between tacks, pulling and tacking until the cover is smoothly fastened. Some fabrics or seats will look best if a pleat is neatly folded at the corner.

I use both a magnetic tack hammer with no, 4 upholstery tacks and a pneumatic stapler. Because you'll need to pull out tacks and staples to rework the cover, place the tacks lightly so they are easier to knock out. I finish off the bottom by cutting a piece of black fabric 1 in. larger than the seat, folding the edges under  $\frac{1}{2}$  in. or so, and neatly stapling the fabric to the bottom of the seat. □

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## SOURCE OF SUPPLY



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