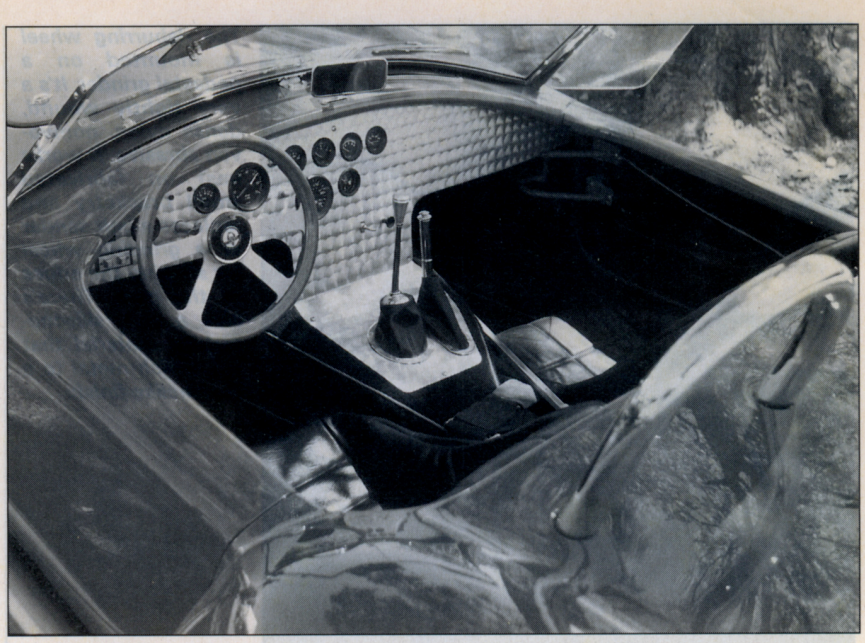


Classic Beauty

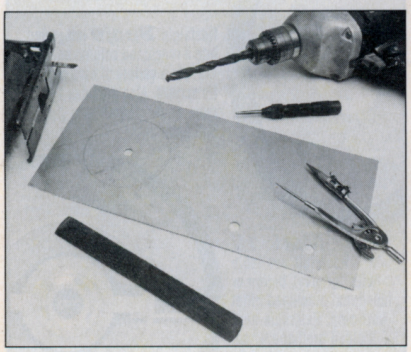
How to Do Engine-Turning at Home

By Harold Pace PHOTOGRAPHY: HAROLD PACE

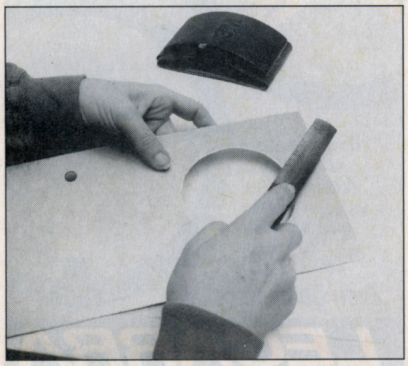
Classic cars of the '20s and '30s often feature on their dashboards, firewalls, and metal trim a striking form of metal engraving that consists of overlapping, circular rows. The technique is called engine turning, machine turning, or damascening.

Best-known examples are the firewalls on Bugatti race cars and the instrument panels on Cords. In 1924, French manufacturer Delage engine-turned the entire body on its race cars. After WWII, engine turning was taken up by American hot rodders, who added luster to innumerable dashboards. Engraving became so popular that fake engine-turning showed up on mundane sedans and a tacky stick-on plastic clone was offered. Those second-rate phonies didn't, however, hold a candle to the real thing.

Real engine-turning looks great, and the best part is it isn't particularly difficult to do, just time-consuming. If you have access to a drill press, you can do it for a minimal outlay. Engine-turned panels look great in engine compartments, footwells, and on dashboards and consoles. Engine-turning must be done on a flat surface, so any panels that are to be curved should be turned before bending.



Cut out the panel to the desired shape. With a pencil, mark the location of instruments, switches, and mounting holes. Use a punch to mark the centers and then drill the holes to size. Use a compass with a soft lead to mark larger holes. If a saber saw is needed to cut instrument holes, cut from the backside or lightly glue cardboard to the metal to prevent scratching the surface.



The part mustn't have scratches or dents. Sand it with 360-grit wet/dry sandpaper until it's smooth. File the edges and bevel the screw holes to avoid damaging the turning tool.

WHAT YOU NEED

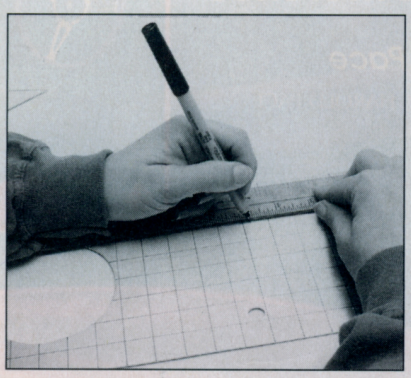
First you need a panel to be turned. Aluminum works best, but copper, brass, stainless steel, or other sheetmetal will work. Practice with some scrap until you get the hang of it. Your final panel should be thick enough to be rigid, or you'll need to support it while turning. Cut the panel to its final shape, and drill or cut holes for gauges, switches, and so forth before turning.

TOOLS & MATERIALS

Drill Press: It doesn't need to be fancy. The "throat" or distance from the drill head to the vertical support determines how wide a piece

For a handmade tool, glue a thick leather circle to a same-size grinding stone (use strong epoxy). Trim the leather to tool size. You'll need valve-grinding paste too. We recommend that you make several tools in case one comes unglued while you're working. Old belt leather or shoe leather works great.

The Eastwood kit simplifies the job. It's available in ½-inch and 1-inch sizes. The 1-inch-diameter kit ($24.99) includes two rolls and a mandrel. The ½-inch kit ($17.99) includes two 6-inch-long rolls which are cut into six 2-inch-long rolls (no mandrel is needed). The abrasive is impregnated into the rolls, so no paste is needed.

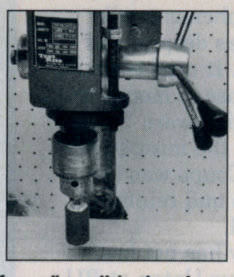


To draw a grid on the dash, use a soft, fine-tip marking pen (so as not to scratch the surface). The squares should be slightly smaller than the turning-tool's diameter. For ½-inch swirls, make the squares ⅜ inch. For 1-inch swirls, use ¾-inch squares. Experiment on scrap first, as you may prefer more or less overlap than this. For more overlap, make the grid smaller.

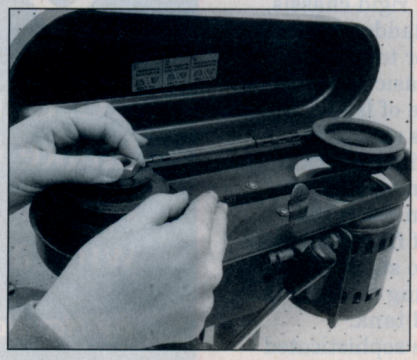
you can turn. By reversing the part, you can turn a piece twice as wide as the throat. Tired presses with wobble in the drill head won't make as clean a swirl as a tight one, but may still be usable.

Wood Platform: You'll need a wood platform to support the work piece while it's being turned. A piece about 1 foot wide by about 2 feet long should be okay.

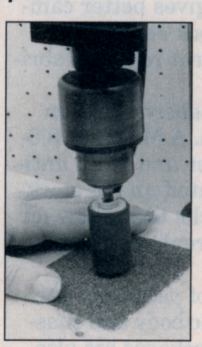
Turning Tools and Supplies: *Option A.* Make your own from a circular grinding stone with a round piece of scrap leather epoxy-glued over the grinding surface. You may want to make several in case the leather comes off while you're working. You'll also need oil-based valve-grinding paste (available from NAPA and other parts stores) and 220-grit sandpaper to dress the tool. Although you can



Set up the press as shown. Use the wood base for the work piece to slide on (make sure it's level). Good lighting is necessary. If you're turning a long piece, you may want to make a "fence" to slide the piece against to keep the lines straight, but it will have to be re-aligned on each pass.



Set the drill press for its slowest speed (900 to 1,400 rpm). Most drill presses have a multiple-size pulley arrangement that allows the belt to be switched from one pair of pulleys to another to alter the speed.



Lay 220-grit sandpaper under the tool and lightly bring the spinning tool down on it to dress the end. This removes irregularities that can affect the swirl pattern. If using a leather tool, add a light touch of grinding paste. If using the Eastwood tool, give it a squirt of oil. Don't lay the sandpaper directly onto your work piece, as it may mar the surface.

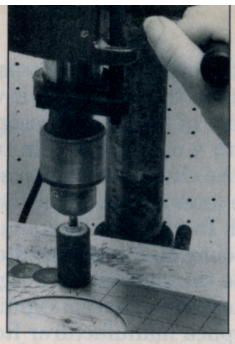
make any size you want, most engine-turning is done with ½-inch- and 1-inch-diameter tools.

Option B. You can buy ready-made tools that are impregnated with an abrasive from Eastwood. They're available in ½- and 1-inch sizes. Use WD-40 or a similar penetrant for lubrication.

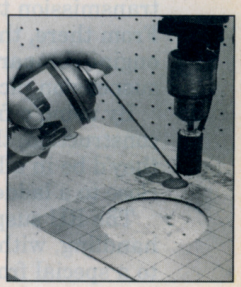
Cleaner: Use to remove the residue.

Clear Finish: Use to protect the finish and prevent dulling.

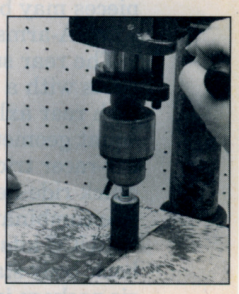
Safety: Use some form of eye protection, such as goggles, and wear expendable clothing. A fair amount of lubricant and abrasive get slung about during the turning operation, so don't try this in the living room. Cover or remove anything you want to keep clean.



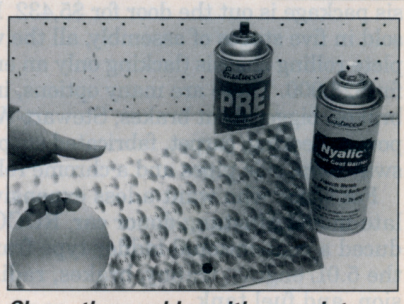
Begin at the top left corner of the work piece and move it from right to left. The bottom edge of the tool should just touch the lower horizontal line and the vertical line to the right. This sets the amount of overlap. Keep both the time you hold the tool in contact with the piece and the amount of pressure you use consistent (about 2 or 3 seconds). Avoid too much pressure as it can cause the tool to deform or become unglued. Practice on scrap pieces until you like what you get—different metals will require adjustments in time and pressure. Be careful not to smudge the grid while you work! Repeat the passes in the same direction, starting at the left side.



When using the leather tool, you'll need to reapply the grinding paste about every 10 swirls. The Eastwood tool (shown) will require a small squirt of oil every other swirl. If the tool begins to work erratically, remove the work piece and clean the tool by bringing it down gently on 220-grit sandpaper.



If the piece is too big to cover in one series of passes, it can be reversed. This allows you to work on a piece that's twice as wide as the throat of the press. When reversed, you move it from left to right, lining things up in the reverse.



Clean thoroughly with a paint-prep solvent like Eastwood PRE aerosol. Then coat with a clear coating like Eastwood Nyalic Clear Coat Barrier to keep your masterpiece from losing its luster. Engine-turning adds a hand-finished touch that complements any kit project. **KC**

SOURCE

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