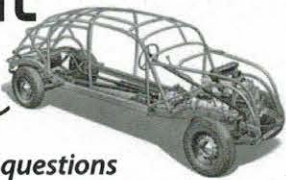


TECHNICAL Tips



cause we all have questions

Making Replacement Knobs

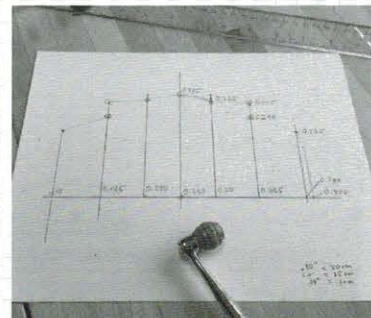
By John Boyd

My 1936 Airflow DeSoto project car arrived with incorrect chrome knobs on the windshield-operating cranks. After a couple of attempts, I was able to replace them with close approximations to the originals. Dr. Mark Rasmussen, my son-in-law, is expert in all things digital, and he did most of the work. Here's how we did it. We used a "three-dimensional printer": a computer-controlled machine that can construct solid objects under computer control. Rather than putting ink on paper, it works by heat-softening a fine fiber, fed from a spool of plastic stock, building up an actual solid object one layer at a time. The finished object can have nearly any shape, size limited only by the capacity of the 3D printer. The process is shown in the sequence of photos: measure an original knob to determine the shape and dimensions, then create a computer-aided-design (CAD) model of the knob. Using a 3D printer under control of a computer program, "print" a knob that matches the model. We compared the first produced knob to the original and made a couple of refinements in the model, then printed a second version. I painted the reproduced parts using two colors of acrylic paint and a clear spray to approximate the mottled appearance of the original knobs.

I found that the original plastic knobs, at least on my DeSoto, were attached to a knurled, steel spindle that was difficult to remove from the window handle. I wound up breaking the old knobs off the spindles. Then, after heating the spindle with a propane torch, I pressed the reproduction knobs onto the hot shaft. This melted the plastic sufficiently to enlarge the hole and hold the knob securely on the shaft.

A live demonstration of the printing process is planned for the Western Region Spring banquet at the Big 3 Parts Exchange in San Diego. The 3D printing technique could be used to replace other hard-to-obtain parts as well.

We started with an original knob in fairly good condition, measuring its dimensions and estimating the contours.



Mark used a computer-aided design program to convert the measurements to a solid model that can be reproduced in plastic on the 3D printer.



The replacement knob (left) comes off the 3D printer in plastic, black ABS in this case, which was painted with two colors of acrylic (center). The finished product, sprayed with clear coat and installed onto the crank handle shaft.



WELCOME NEW MEMBERS

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