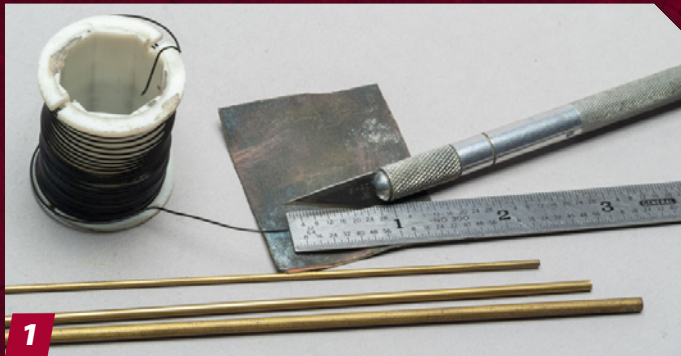


## HOW TO SCRATCHBUILD COIL-OVER SHOCKS FOR SCALE AUTOS

SCRATCHBUILT COIL-OVER SHOCKS will improve the look of any model car, truck, or motorcycle over molded shocks provided in a kit. Don't be daunted by the process — you probably have the tools and materials already on hand.

By Mark Jones



**1**

You'll need brass, aluminum, or plastic tubing (for 1/25 scale, I used 1/16-, 3/32-, and 1/8-inch o.d.) and wire for the spring. I prefer brass, although plastic is easier to work with when cutting. The wire came from a craft store's beading section. You'll also want a hobby knife and 400-grit sandpaper.



**2**

To cut the tubing, roll it under the knife blade with moderate pressure. Get a straight line around the circumference and then keep rolling. Don't push too hard — it won't cut much faster, but you will work your fingers more and possibly make the part shoot off. You could use a pull saw and miter box instead.



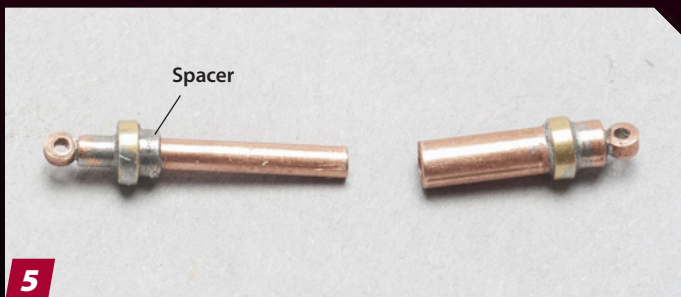
**3**

The shock has seven parts: two eye mounts for the ends (you may want to make posts or another mount depending on your subject), the shock body cylinders, two spring collars, and a spacer for the collar that fits on the smaller shock cylinder. Because of size, I find them easier to clean up after assembly.



**4**

Just like with any subassembly, test-fit the parts. While not in their exact and final locations, you know that all the pieces fit together. If something doesn't fit correctly, it will show up now and give you a chance to fix it.



**5**

Here, I've soldered together the halves of the shock; superglue or epoxy are viable options, too. When making shocks with plastic, I prefer liquid cement to allow the parts to set in place and then adjust if needed. Note the collar spacer is positioned toward the inside of the shock, not the end.

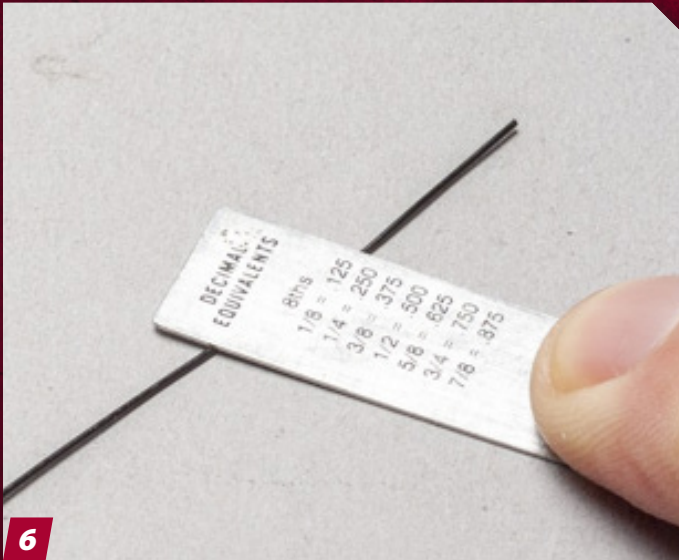
### How much wire do you need?

**MEASURE THE DISTANCE** between the spring collars on the assembled shock to determine how tall the spring should be. Obviously, the distance between depends on your application and the amount of extension or compression you want to model into the shock. Unless you are making a fully compressed spring, allowing at least the same amount of open space between the coils as the diameter of the wire is a good place to start.

A good rule of thumb is to double or triple the distance you measured between the spring collars and multiply that number by 3.5 (a little larger than 3.14 or Pi). This will back in the circumference of the spring and also provide a little extra material for you to work with.

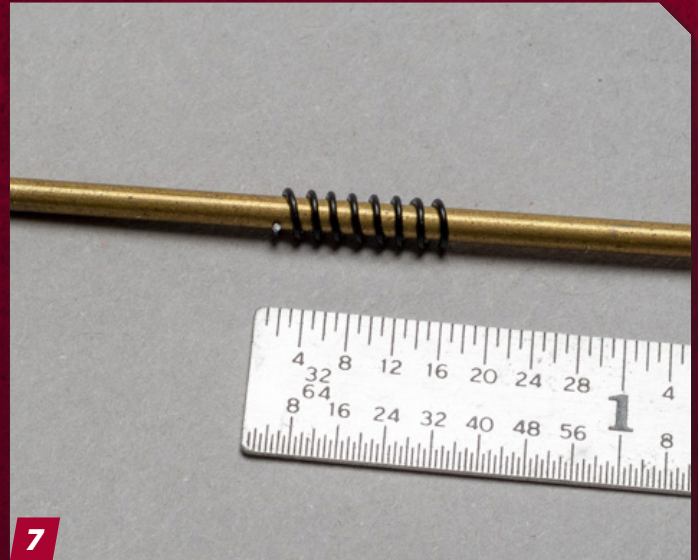
# SNAPSHOT

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**6**

Using a metal straightedge, roll the wire back and forth on a hard surface starting at one end and working along its entire length. While the natural bow of the wire from the spool is not a big problem, I prefer to straighten it before winding. Plus, this will remove any kinks that might be in the wire.



**7**

To make the spring, wrap the wire around the tubing you used for the larger shock body ( $\frac{3}{32}$  inch in this case). Check references to ensure you wrap the spring in the right direction — it may matter. Adjust the coils until you have the spacing and height to fit the shock. The ends of the spring should be perpendicular to the collars.



**8**

Test-fitting the shock halves and spring before priming and painting. If you build the shock with plastic, you might skip the priming stage and save a bit on paint thickness. Building the shock with an aluminum piston shaft could also save you time on painting.



**9**

Finished! I decanted Tamiya Bright Red (No. TS-49) and painted the piston shaft/smaller shock body cylinder Sparkling Silver (No. LP-48). The friction of the spring on the shock holds it all together, but a small drop of superglue can be used if necessary. **FSM**