Bending Aluminum Tubing

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I've collected some ideas about bending aluminum tubing from an extended exchange of e-mails on the SAM Talk forum. You can try almost any of these techniques, and they'll more or less work for you--but you'll have to experiment to see which one is the best and the easiest.

1. A fellow named Mike McIntyre had the following suggestion: If you want an easy way to bend the tubing without it kinking plug one end up, then fill it with water (don't plug the other end up!) and place it in the freezer. With the water frozen inside the tubing, now bend the tubing around your curve. Don't wait too long or the water will thaw out inside before you get your bending done. When you are done bending your tubing let the water thaw out and there you have it.

2. Variants of McIntyre's idea include putting a piece of masking tape over one end of the tubing and filling it with salt or sand, then bending to the desired curvature.

3. Gene WaIIock suggests as follows: The easiest way to bend aluminum is to make a simple form block. Cut a plywood core that represents the inner curve of the form. Leave a couple of inches of straight edge so you can hold the tubing in place. Screw on plywood faces that extend beyond the inner core shape about 1 1/2 times the diameter of the tubing. To work properly, the tubing must fit snug between the sides. Drill a 1/8 hole in the straight portion for a holding pin. This pin will keep the tubing against the core and is located so it almost touches the outside of the tubing. When you're ready to bend the tip, slide the tube behind the pin. This way it won't pop out when you start to bend. It would be a good idea to glue/screw a block to the bottom of the fixture to hold it in a vise.

After sliding the tubing behind the pin, hold it firmly to the fixture. With your bending hand, put tension on the tubing and gently bend it around the core shape. The tube will have a bit of spring back, so you might want to over bend a bit to compensate for this. If it's not bending tight enough, take the fixture apart and reshape the core to compensate for spring back. This is why you didn't glue the fixture together in the first place. This is a good time to understand tube failure during bending. The tubing will kink and the sides will go out. The groove you built into the bender will capture the tubing and restrain the tubing from trying to expand sideways.

4. Gene also mentioned that K & S sells a 1/16 & 3/32 tube bender that works just fine for small tubing. Get one and learn how it works. Your editor notes that DuBro markets a series of tubing benders for larger diameter tubes. If you look at them, you'll see the design involves a curved block with sides that pinch the waII of the tube to keep it from bulging/collapsing while bending.

5. I believe that K&S also once sold some tube bending devices that looked like four inch long screen door springs with a slight flare at one end. They were sold in a pack. with five or six different diameters in the pack. You slipped the tubing inside the "screen door spring" and bent the tubing to the required curvature.