

## NOT TOO KINKY?

Having read an article in Model Engineers Workshop\*\*\* about a pipe bender that used a somewhat novel approach (for me, at least!) to the problem of forming neat bends in a variety of pipe sizes, I thought I would make a tool based on that article and see how it compared with an earlier device.

The MEW design catered for pipe sizes from 3/32 inch up to 1/4 inch with a second “miniature” version just for 1/16 inch pipe. I needed to cover up to 5/16 inch in my current refurbishment of Conway and I considered that the new tool might be “extended” to cover that larger size too. Reworking the design was fairly straightforward using DeltaCad, and metal cutting commenced.

In the previous bender that I made I had met with the difficulty of machining the pipe grooves in the circular “formers” with half-round form-tooling, my machinery not being rigid enough to make this an easy task in the larger sizes, even using aluminium for those formers. So I thought this time I would try using Delrin to see if that was rigid enough. That material machines very easily, if kept cool, but is quite tough in compression and I am pleased to say it seems to work adequately for the formers in this design. I even tried HDPE for one of the formers and that works well too (though static charges during machining cause PE swarf to generally get in the way and to stick everywhere it is NOT wanted!)

Other than the formers, construction generally followed the original concept with parts made in brass or mild steel. The base plate is held in the bench vice when in use. A major advantage of this tool is its quick and easy dismantling to release pipes with complex bends.



Pipe bender and two of the sets of formers

So far this tool has performed well on lots of 3/16 water pipes. The odd bend put in the wrong place can hardly be blamed on the tool! It has also done an acceptable job on the 5/16 superheater extension tubing. The latter required rather sharper bends than the recommended 3x

diameter figure but has worked out far more satisfying than the pipe that was on the loco as purchased!



3/16" water pipe bends



"Before" and "after" super-heater extension pipe

I have only used my version on annealed copper tube so far, and it may not be suitable for stainless steel tube as the original all-steel model apparently was. I am happy with the plastic formers as I have no current need to bend steel tubes. I still need to make the formers for some of the sizes of tube. These can be made very quickly when needed.

\*\*\* "Elegant Pipework" by Derek Brown. MEW vol64 (February/March 2000)