

# Tilting Mantua General Cylinders

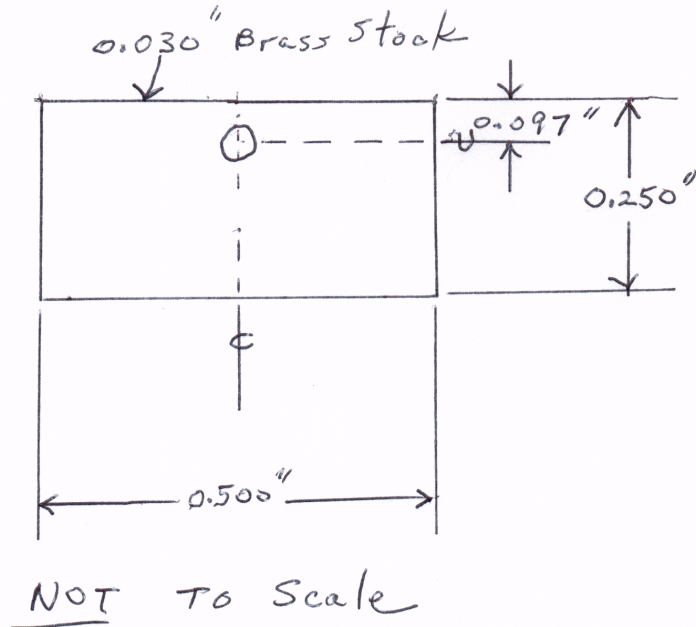
by Al Mueller

1. Clamp the Mantua frame in a drill press so that the frame top is level.
2. Place a piece of 0.045" diameter brass rod/wire 0.5" long at the rear of the cylinder slot in the frame. Using a smaller diameter rod/wire will reduce the amount by which the cylinder is tilted.
3. Place the cylinder assembly in the frame **upside down**. The rear of the cylinder assembly is now 0.045" higher than the front.
4. Clamp the cylinder assembly to the frame.
5. Counter sink the hole in the cylinder assembly so that the top of a 1-72 flat head brass screw will rest about 0.020" below the surface of the cylinder (bottom).
6. Place the cylinder assembly in the frame **right side up and backwards**.
7. Repeat steps 4 and 5., above for the top of the cylinder assembly and remove it from the frame.
8. Place the piece of 0.045" rod/wire at the rear of the cylinder slot in the frame.
9. Place the cylinder assembly in the frame upside down. The rear of the cylinder assembly is now raised for milling or filing.
10. Secure the cylinder assembly to the frame with a 1-72 flat head screw, washer and nut (washer and nut on the bottom).
11. If you are using a milling machine, clamp the frame so the top is level. Set the cutter height against the front (low) edge of the cylinder assembly saddle and mill the saddle flat. If you use a bastard mill file instead, clamp the frame in a vice and carefully file the cylinder assembly saddle flat.
12. Place the cylinder assembly right side up and backward in the frame. Secure it with a 1-72 flat head screw (inserted from above), washer and nut (screwed on from below).
- 13.. If you are using a milling machine, clamp the frame so the top is level. Set the cutter height against the low (rear) edge of the cylinder assembly saddle and mill the saddle flat. If you use a bastard mill file instead, clamp the frame in a vice and carefully file the cylinder assembly saddle flat.
12. Cut a shim from 0.030" brass that is 0.250" wide and 0.500" long. The intent of the shim (which is placed between the cylinder assembly and the frame) is to make the boiler sit level on the frame, so the thickness may have to be varied via experimentation before making this shim.

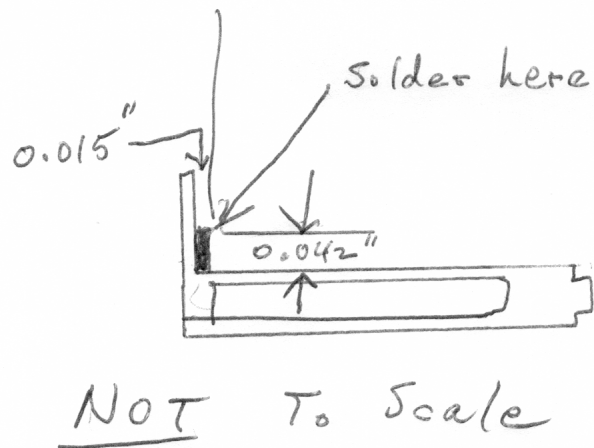
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13. Drill a  $\frac{3}{32}$ " hole in the shim as shown in the drawing below.



14. Solder a piece of  $0.042$ " wide by  $0.015$ " thick brass to the forward side of the tab on the crosshead guide. This will lower the rear of the crosshead guide to keep it parallel with the cylinders. See diagram below.



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15. After soldering, trim the 0.015" X 0.042" stock flush with the sides of the crosshead guide.
16. The finished cylinder tilt (cant) is shown in the following photos.

