From The Workbench

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Fabricating the Water Injector

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When I began this project, I could not find a commercially available casting of the unique water injector used on these locomotives, so I decided to make my own. The following steps describe how I scratch built this injector using styrene and brass tubing.

Cut one piece of .040" and two pieces of 0.020" styrene to 0.128" x 0.105" (see Figure 1). Laminate these three pieces together sandwiching the .040" thick piece between the two .020" thick pieces. Next, drill a .030" diameter hole in to the edge of the 0.040" thick piece centered top to bottom. Now, cement a .220" length of .030" brass wire into this hole. This will serve as the mechanical connection between the styrene piece and the .140" piece of .065" bass tubing. Slip this length of brass tubing over the .030" wire and cement it to the .110" x .110" square. The wire should protrude through the length of .065" brass tubing. This forms the barrel of the injector. Next cut a .147"piece of Evergreen HO Scale 2"x 4". Drill three #76 holes, top to bottom and equally spaced on center. Cement this piece in place over the .030" wire protruding from the end of the .065" tube using the center hole. Make sure this is centered vertically. The remaining top and bottom holes are where the injector piping is attached. You will also need to drill two #69 holes in the bottom edge for the feed water lines and one #69 hole that is centered on the top edge for the steam line.

The plumbing between the injector and the boiler is made from .029" brass wire. Figure 2 shows this detail. The top and bottom pipes attach to the top and bottom holes of the 0.105"x 0.10" piece of styrene that is attached to the barrel of the injector. Bend to an approximate 45-degree offset in the top pipe about .220" away from the injector end. This pipe runs .095" above the running board mounting groove and terminates 1.820" from the injector end at the check valves. When the check valves are cut from the sprue the bottom of the castings need to be filed flush with the base of the flange. Next, drill a #67 hole in the flange. This forms the mounting for the inject pipe. Pre-form the injector pipes and cement the check valves to each line with ACC before mounting them to the injector and boiler.

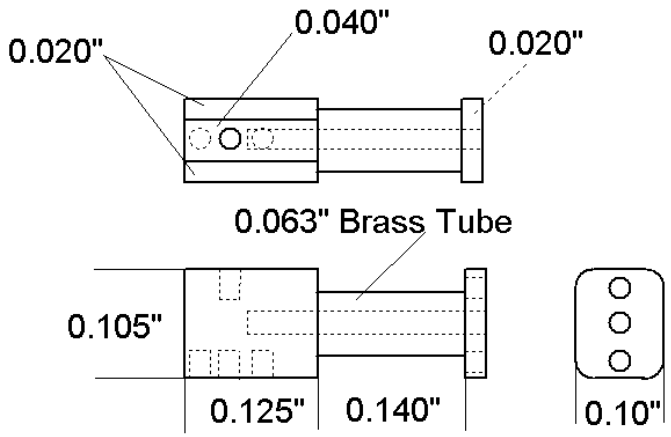

Figure 1: Injector Body Detail

The feed water and overflow pipes are made from .029" brass wire and are mounted to the bottom of the injector. The feed water lines are roughly .717" in length before they are bent at an angle pointing back to the tender. Refer to figure 1 above. The second line (left to right) has a 90-degree bend back toward the locomotive frame. This is where the second water line from the fireman's side of the tender would connect. The overflow pipe is butted up against the injector barrel. Lastly, cement a .130" length of .015" wire to the face of the .110" x .110" injector body to form the control level.

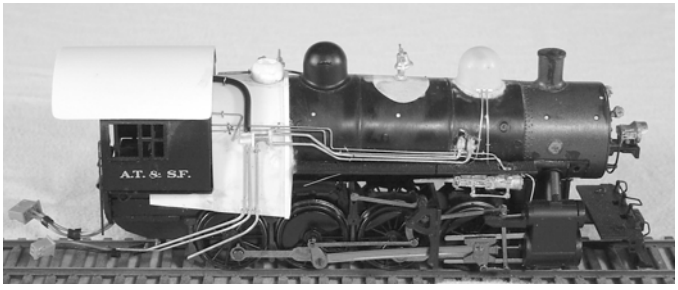

Figure 2: Engineer's Side View