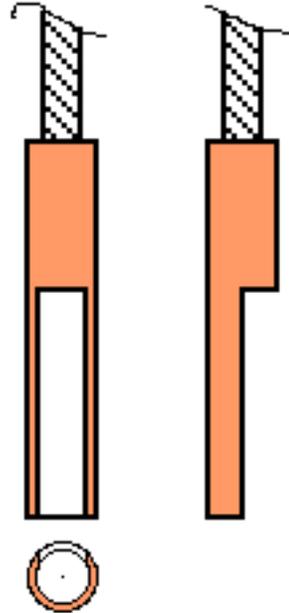
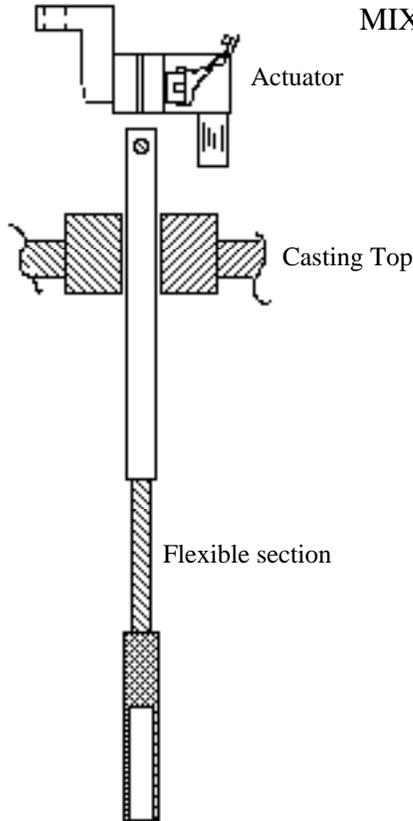
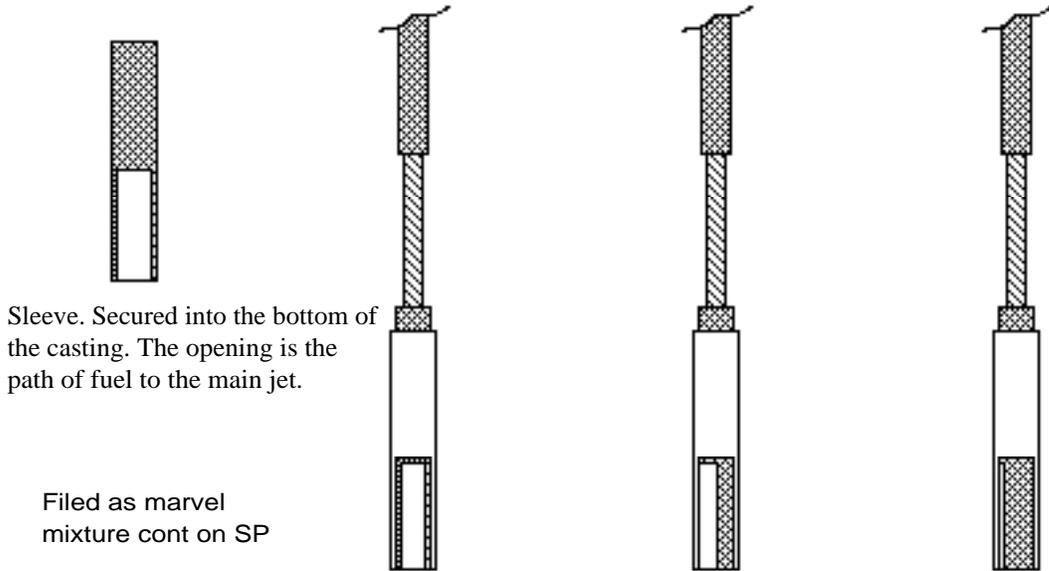


## MIXTURE CONTROL STEM & SHIELD



Above, the front and side view of the fuel port in the stem, illustrating how it is bored out and has a segmented opening for fuel flow.



Sleeve. Secured into the bottom of the casting. The opening is the path of fuel to the main jet.

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With stem inserted into the sleeve, and showing full open, partially open, and nearly closed, that being the mixture action as the mixture stem is rotated. At idle cutoff, the edges overlap, allowing no fuel to enter the system.

Note that, at the top, the actuator is clamped to the stem of the mixture's top shaft. It, the shaft, the stops, and the openings through which the fuel passes must all be aligned exactly to ensure full rich and full off.

**Mixture Control from the Tech Order for the Marvel MA-3SPA:**

“The mixture control metering valve assembly is provided at its lower end with a mixture metering valve which rotates in a stationary mixture metering sleeve. The mixture metering sleeve is provided with a transverse slot through which the fuel enters and fuel metering is accomplished by the relative position between one edge of the longitudinal flat on the mixture metering valve and one edge of the slot in the metering sleeve. When the mixture control is in Rich position, metering is controlled by the power jet but in other than full rich, metering is accomplished by the relative position of the respective edges to the sleeve and mixture metering valve. With the mixture control in the lean position, no fuel is allowed to enter the nozzle and idle system, thus providing what is known as “idle cut-off”.”

After this was “complete” the question as to whether I had created a figure of the mixture a long time ago, and I had. My Marvel came with the engine, assertedly the “smoothest” engine on the line. I pity the other engines because my perfect carb meant two stutters on takeoff and a big stutter when a rapid throttle movement was used in the air. I took it off and opened it up to see what was inside and why the carb makers had said that the very sloppy fit of the mixture shaft to its guide in the casting did not matter. It was kind of true; the flex part of the stem makes the bottom valve not care. The previous page shows that representation of the feature and how it works. It better illustrates how everything must be aligned and combined to ensure fuel cutoff at one extreme and full rich fuel at the other. Note that they talk about a “flat” whereas I show what I saw and what the figures from the maker show, a hollow valve.

**Marvel Mixture movement and control:**



The movement of the throttle mixture “cam” is controlled by the rod striking the case, shown left above in the Rich position. Lean position in the middle. The rod of the mechanism MUST!!!! Strike the flat pad as shown here for full mixture control. With the mixture control in the intermediate position, the “stop” indentations at both extremes are prominent at the right. The bumping of the cam rod at the casting flat spot has caused a significant indentation in the casting at the Rich end. The relationship of the cam, stop, casting stop, SCREW and rod which rotates the mixture control MUST be coordinated such that the mixture control does truly shut off the fuel and deliver all that is needed.

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