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**FAA-PMA
Stearman Fuel
Gauge**

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Seal – No more
leaks**

**Can Rotate Gauge
to Face Cockpits**

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Stearman Fuel Gauge

The fuel gauges that have been available in the past from different suppliers have had their share of problems. For example, we have seen the threads on the attaching nut of some gauges with pipe thread pitch, but pipe threads are tapered and the fuel tank has straight threads. The fuel gauges of the past have had sealing problems as well. When the tube is loosened to get the numbers to face the pilot it will start leaking then or in the near future. Previous gauges use putty or shellac to seal the tube and nut to keep it from leaking! Operators have tried everything from JB Weld to gasket setups to help keep these gauges from leaking.



This is an example of what appears to be Shellac used to seal the sight tube to the retaining nut.

During the last year it has become apparent a reliable non leaking FAA-PMA fuel gauge is needed for the Boeing Model 75 Stearman.

In studying the original Boeing prints, we discovered that there are two different fuel gauge models. The early style has a silver soldered joint in the cork guide wire and the later style is made of one piece. The later gauge also has a metal band at the end of the sight tube to stop the tube from splitting when the plug is screwed in. We decided that the new FAA-PMA gauge should incorporate all of the later improvements in the new design. The cork is also held in place mechanically, using an Aluminum washer crimped to the indicator wire. All of the original steel parts are manufactured with stainless steel.



Retaining washer can be seen at the bottom of the float.



As can be seen in this picture the reinforcement ring at the bottom of the tube.

Next was several months researching plastics to find the best to make the sight tube. Through research it was found that the original material that Boeing use is still available. It is not affected by avgas and is not brittle like the Acrylics that have been used in the replacement gauges of the past. An order of six hundred feet of this material was required to get the I.D. O.D. dimensions needed to make the sight tube. One test of the tube material that we performed was pinching it in a vise to see if it would shatter like Acrylics. The results revealed no cracking or breaks in the tube. This we thought was a big plus in case of a bird strike on the gauge. This is probably one of the reasons Boeing used this material during production.



Sight gauge tubing material after being crushed flat in a vise. No cracks or breaks.

The leaking problem with these fuel gauges was the next problem to solve. We designed the top portion of the tube to accept an O-Ring seal. We experimented with two O-Rings instead of one, but found that two can cause problems getting O-Rings to seal properly. The one ring seal has proven superior. We are using the best material available for the sealing ring. At the same time the upper portion of the tube was redesigned so it was adjustable. This change makes it so the sight tube can be turned after installation so the numbers face the pilot. No loosening is required, just simply turn it with your fingers and leave it.



This shows the O-Ring seal installed at the top of the sight tube to create a positive seal.