

Fuel Sumps & Things

Vance Atkinson (TX) - A lot of people have asked about my fuel sump system, "Here's how it works." Because the rear seat thigh support was woefully inadequate I decided to rip it out and replace it with a larger more comfortable unit similar to the front seat.

About this time a lot of people were having trouble with their fuel selector valves and I thought if I made this a sump tank I could eliminate those pesky fuel switching problems.

To be fair, the Velocity group has had a similar system for several years so I knew it would work. It would be just a matter of finessing it out. Did I say simple? My sump turned out to be 1.9 gallons in volume, unbaffled, and has a double floor that is tilted to provide a low spot no matter if the plane is on its nose or in flight. It also helps the safety pucker factor when you belly in. The lowest spot in the sump has a quick drain. I still have all the other drains but this one gets all the crud and water. Truly the low spot in the system.

Because I installed this system after the Cozy was built I didn't install a vent line in it. If I was building a plane today, I'd put a vent line from the sump tank to either of the main wing tanks. Presently I have a small threaded hole at the high point of the sump and have a flush plug in it. If the fuel level ever drops below the full

level in the sump (both mains dry) and the engine starts depleting fuel from the sump, then, when filling up I'll have to loosen the plug as the sump fills up to "burp" out the air (kinda like burping a water bed). If, for some reason, you fill up and couldn't burp it . . . not to worry, the sump will still hold 1.6 gallons of fuel (out of 1.9 gal) which means there will always be .3 gallon of compressed air in the sump until, at some point down the road, you will burp it. That is why you put the vent line in if you are building from scratch.

The line that feeds the engine also has an on-off fuel lever and a cable to the front seat. Normally you would shut off the fuel only during engine maintenance or an emergency.

Up at the top of my sump is a simple float. If, for some reason, the engine starts drawing fuel down in the sump a LOW FUEL light is triggered on the panel. Unfortunately, in turbulent air this winks at me constantly and tries to set off my audio alarm. I wind up pulling the circuit breaker when this happens. I'm not really sure if the warning device was such a good idea.

This is the third year I've had this system and I've tried to test it under all conditions. I've used it with an Ellison and with fuel injection. I've run it inverted, side slipped it, and sustained negative G's (engine quit!) I've run it down to one gallon (over the airport) I've filled it up with and without the air bubble. I even ran it dry to time the warning light to empty.

The only thing I don't like about it is it

makes your airplane one big fuel tank and if you pick up some contaminated fuel, soon all your fuel will be contaminated. On the other hand, if you only put 10 or 20 gallons in your tanks, you always put it in one tank and Presto! in a few minutes your main tanks are leveled out. You never switch tanks and you never have to level the tanks in flight. It's a very simple trouble free system. It works for me and it makes the space under the thigh support useful. This system is very similar to the fuel system in the Falcon Jet I fly. The old system is somewhat similar to the Learjet fuel system.

If you are building a Long-EZ or Cozy you could eliminate those unsightly bulges under your strakes! . . . Just think, .0003 units of drag eliminated!

Retractable Gear Update

I recently received a video tape from Steve Drybread (CA) showing the complete retractable gear system as installed in his Long-EZ. Some of you may remember that Steve's latest Long-EZ has completely retractable gear designed by Scott Swing. Soon he will have a better video available at a minimum cost for tape and postage.

Presently, Steve reports there are 6 sets of retractable gear legs out there in various states of completion on Long-EZs and Cozys. Scott Swing is currently working on a retractable gear for the Cozy Mark IV.

The nose gear retract system with a manual override is about ready. The kit will be \$350-\$375. The main gear kit will be \$2,500 - \$3,000.

Anyone interested in these kits may contact Steve Drybread at: (619) 431-5562.

