

SUSPECTED CAUSES OF 1/2A ERRATIC RUNNING

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I used the word *suspected*, because Cox 1/2A reed valve engines are not subject to ordinary laws of physics and mechanics that apply to other engines. They may work fine for a while, give problems for a while, and then start working OK again. This seems to happen without regard for any corrective actions on your part.

With that said, let's do our best to guess just what might cause problems, and so what might cure them (sometimes). One thing I've observed is that new out of the box factory engines usually start and run quite well for a while. When problems begin to crop up and parts have to be disassembled is when the troubles start. I suspect just two main reasons for most of the problems.

First is dirt. Not just ordinary dirt that you can see and deal with, but near microscopic dirt and tiny fibers. I used to wrap a paper towel around my engine between sessions until I realized (with a hint from my wife Marjorie) that those towels are a source of fine fibers which can sneak through the exhaust slits to land on the side of the piston. That's all it takes to cause erratic running until the fiber washes out or wears away. A lot of problems disappeared when I stopped that practice.

When you've taken an engine apart and start to re-assemble, you have to be scrupulously clean. I wash most parts in soap and water with a brush, followed by a final rinse from a squirt bottle of methanol kept on hand. The methanol is the final rinse, and it absorbs and disperses any remaining water. That's followed by a fuel rinse to lubricate and prevent rust. One of the final assembly steps is to insert those four screws that hold the tank on. Wait a minute did I just pick those screws up off a paper towel? That could transfer a piece of fiber directly into the tank.

I always fill the tank through a filter since there's no real in line filter in the engine. Incidentally that little spring in the fuel pickup line does trap a little lint. Don't discard it. Some guys say they just use clean filtered fuel. But I can almost guarantee that if you run a half empty can of fuel through a coffee filter, you'll find sediment. Incidentally some have reported the coffee filters themselves as a source of fine fiber. That sounds possible, maybe probable, but it could vary by brand of filter. I can't identify with that problem since I also use the filter on the syringe going into the tank.

Once at Taft, I had a breeze upset my ship upon landing and it kicked up a puff of dust. When I went to re-start there was low compression. When the problem had been solved this is apparently what had happened: A small speck of dirt had gone into the exhaust opening and had smeared between piston and cylinder, pushing the piston to one side a tiny amount.

I tried flushing it out, with the head off, but the dirt was probably pasted onto the cylinder wall. I had a good score going and there wasn't time to disassemble and wash things out

properly. So I took the crude approach and managed to get the engine started. By nursing the needle while running through a thankful of fuel, the dirt apparently wore itself out and flushed out through the exhaust. I doubt this did the engine any good, but I didn't notice any permanent loss of performance.

The **second** prevalent cause of erratic running is just something I strongly suspect. That ball and socket assembly at the upper rod sometimes allows the piston to rotate during running. (I've checked this out). I believe the piston can wear out of round due to uneven friction and pressure caused by the cylinder gaps where the ports are located. After running in that position for awhile the piston can rotate to a different position where the running fit and friction varies. I made a holding fixture for the piston to facilitate faster break-in by lapping in the cylinder. I can clean and oil piston and cylinder on some used engines and feel the out of round condition when rotating the piston in the cylinder. If there isn't too much wear, this can sometimes be lapped out successfully with red rouge by just rotating the piston in the cylinder.