

Compass Correction

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My Long-EZ has no gyros so all heading information must come from the whiskey compass. While in Alaska, I became very aware of the fact that my compass accuracy determined the success of a flight.

For some time my compass had seemed a little off on south easterly headings but I just ignored it or said it was wind drift without checking my deviation. I had intended to check it at the KCGIG compass rose but my small brain was diverted and the job wasn't accomplished.

While in Fairbanks, I found a compass rose painted on the taxiway and decided to make a new correction card. I did not have a non-magnetic screwdriver to readjust the compensating screws but I, at least, knew what the compass really indicated. In some headings I was more than 20 degrees off. Such inaccuracy could have been a problem had I tried for Point Barrow on just dead reckoning.

If you have not checked your compass for a while you might wish to make up a new correction card. I've printed a spare below to give you a fresh start.

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Steer						
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Look out! I'm going to the
KCGIG 93



I Rode in the Berkut

Skip Barchfeld (TX) - as things worked out Dave Ronneberg gave me a ride in Berkut and that is a ride I will never forget.

As I settled into the rear cockpit Dave handed me a set of Bose headsets and asked if I liked soft rock. With that background, I compared the flight to something out of Star Wars.

After a high speed pass (250 kts) down the runway we went almost vertical to 5,000 feet to do turns around a cloud at high G, followed by dandy rolls and some lazy eights.

Later he offered me the controls. I have never flown an airplane with such precise control. It responded instantly to any input. The electric trim made the plane fly straight and level, hands off. I just hope my Long-EZ does a fraction as well.

A couple landings showed that the gear is quite a bit more firm than a Long-EZ. All too soon the flight came to an end and I wondered if Dave would accept a Long-EZ fuselage as down payment on a Berkut kit.

Leaky MA-3 Carburetor?

Once upon a time I believed that OEM (original equipment manufacturer) made parts were the only reliable way to go. After all, if they made it originally, they should be the best equipped to make the replacement parts and have their good name and day in court to gamble if the parts are defective. This fairy tale usually ends with, "and they all lived happily ever after." Reality is a bit different I found

recently.

My O-235-C powered Long-EZ has over 1,000 hours on it with the same badly worn MA-3 carburetor which was on it at first flight. I decided it would be a good time to comply with all the service bulletins and replace the throttle shaft, 2 piece venturi, and finally change from the composite float.

\$275 later, I replaced the freshly overhauled carburetor and turned on the fuel pump to leak check the installation. I was amazed to see fuel pour out the overflow hole at the bottom of the venturi. I returned the unit to the overhaul facility where the mechanic disassembled it and declared it was OK and to try it again. I installed the carburetor again and got the same results.

I again returned the carburetor and the mechanic decided the needle and seat must be leaking. \$60 later, I put the carburetor back on again. (I'm getting better at carburetor R & R) Once again the unit leaked like a sieve. I returned the unit and told the mechanic to lower the float level below what the OEM specified.

The lower float level helped. It passed the pressure test in the hangar. I took the airplane outside and started it up with great difficulty. After a 5 minute run I shut the engine down and watched fuel run out of the carburetor again. By then I was assured that Mr. Marvel and Mr. Schebler didn't know who their fathers were.

The mechanic said he had no idea what was wrong and left me to thoughts of getting my glider rating dusted off.

A chance encounter with Bob Wilson of The Ayling & Reichert Company, who manufactured the floats for Precision Airmotive, revealed the reason for my problems. It seems that Marvel Schebler-Facet-Precision Airmotive are not manufacturers of anything. They just assemble parts that are produced by other manufacturers. I

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discovered the float I bought for \$125 from Precision had been sold to them by Ayling & Reichert for \$6. Who says there is no money in aviation?

I was told that Precision told Ayling & Reichert to manufacture a batch of floats and supplied original drawings. The newly manufactured floats did not fit in the carburetors and consequently stuck. Careful dimensional checking by Ayling & Reichert assured that their floats did agree with the Precision Airmotive supplied drawings. The only variable left was the carburetor bowl casting. Ayling & Reichert measured an assortment of MA-3 castings and discovered they varied widely. It was discovered that the original castings were made using badly worn tooling and that each carb casting was slightly different from the previous one. The end effect was that each newer carburetor had a slightly smaller fuel volume and less clearance between the float and the casting walls. I was told Precision Airmotive was informed of the wide dimensional variation problem but insisted on producing the floats to the original plan. Because of this, some MA-3 carburetor floats stick, thereby,

causing leaks and **very rich** mixture settings.

The mixture can be so rich that the engine will not develop full power and runs very roughly. I've heard of cases where pilots have made precautionary landings because the engine was running so roughly that stoppage was predicted. I wonder how many "**Engine lost power**" accidents can be attributed to sticking floats in these FAA approved carburetors.

Now that the cause is apparently known - what is the fix? Bill Smith of Consolidated Fuel Systems had Ayling & Reichert make a batch of floats that supposedly do fit and work in the MA-3 carburetors with the undersize float chambers. Call him at (205) 286-8551 for information.

To fix your existing Precision Airmotive float system you might try Bob Wilson's suggestion. First you need to determine where the float is sticking and then increase the clearance so it does not touch in the future.

To do this you must remove the carburetor and drain it completely. Paint the float with Prussian blue

toolmaker's ink then reassemble and shake like crazy in all directions. Remove the carburetor top and look to see where the ink has been applied to the casting wall. Those spots are where the float has been touching. Clearance in those areas needs to be increased. I elected to Dremel the inside of the casting and then polish with succeeding finer abrasive papers. Repeat the blue ink procedure until no more float contact is observed.

I suppose one might also alter the float but that is a pretty risky business as leaks are easy to get and hard to fix.

I tried the trick of grinding out the inside of my float bowl and reinstalled the carb, knowing I'd finally solved the problem. Guess what? It still leaked.

I then screwed a fitting into the float bowl drain and rigged a clear tube sight gage to so I could monitor fuel level while the carb was under pressure. I found the fuel level was moving swiftly up to the desired level and then **SLOWLY** moving higher and higher until it overflowed out the float chamber vent. (See adjacent photo)

That indicated the brand new Precision Airmotive needle and seat assembly must be leaking. I replaced it with a STC'd Consolidated Fuel Systems part and **PRESTO** the fuel level stayed right where it should have stayed. Ahh, so much for OEM high priced parts. Or so I thought.

I took the airplane out to run it up and it worked fine. I cowed it up and tried to start it. It acted too rich - and then I saw the puddle of fuel again!!

I then sent it away to one of those high dollar repair places and for \$158.60 I found the \$3 clip that holds the needle to the float assembly was at fault. It no longer provided proper alignment between the needle and seat. I reinstalled the carb and it seemed to work properly. I now have two flights on it and nothing is running out the bottom of the cowl. Could it be the problem is **solved**?

