

KOEHLER KORNER

This month's article is a follow-on to last month's story, which was a follow-up to the previous month. You may remember I confessed to installing a cylinder on a C-182 engine and failing to install the plug in the fuel injection port above the intake valve in the cylinder head. This hole in the induction manifold allowed so much air in that the new cylinder would not fire at low rpm. It took a while to find the problem and the engine ran, at low power levels, for about 15 minutes in this configuration.

After discovering the problem, we fixed it with a brass plug from the old cylinder and proceeded with the cylinder break-in, which involved flying the plane at a high power setting that would generate enough friction in the cylinder to get the rings to properly seat on the cylinder walls. Under normal circumstances, Superior Millennium cylinders have a reputation of breaking in relatively quickly, typically in an hour or two. They have through-hardened plain steel cylinders and chrome piston rings. The owner started the C-182 and got it airborne within a few minutes, as the recommended break-in procedure recommended, but the new cylinder immediately showed a very high CHT on the multi-probe engine analyzer.

After about 7+ hours on the new cylinder, we decided to take it off and have it thoroughly inspected using Aero Services of Winchester. After the inspection we put new rings on the piston and installed the cylinder for the second time. Again, long story short, the high CHT problem was still there.

We all agreed that the earlier problem with the missing plug in the injection port had nothing to do with the break-in issue. After another visit to Aero Services, they decided to remove the cylinder (a third time) and replace it with new. To do so, they first removed the exhaust system and discovered the following:



It turns out that the exhaust system developed a leak on the backside at a slip joint and the leak was directly impinging on the CHT sensor probe. This was giving an artificially high indication of the cylinder's CHT on the display in the cockpit. This solution completely explains why we had the high CHT indication and no other indication of cylinder distress, such as high oil consumption or temperature. A weld repair and this engine/plane should be happily flying again. When this happens, we can hopefully verify that the cylinder has broken in successfully. The

relatively small leak was hard to detect because it left no trace gas markings on the cylinder, and was on the backside where it was not clearly visible.

I hope this discussion of the ongoing issue associated with replacing a cylinder helps you more successfully understand and maintain your plane.

Keep building, flying, and maintaining.

Dick

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