

BW350 Seal Retainer Follow Up #2

While discussing other details during Larry Perryman's last visit we realized that the original breather concept I proposed would not work very well.

The problem arises when the governor releases a large amount of lubricant every time the propeller is cycled into the upper case area, which is just below the top cover plate. It only takes a one or two seconds for the lubricant to drain into the lower case, but effectively this pressurizes the upper case and would force some lubricant out of the breather each time. Eventually this will lead to the same low lubricant level that loosing the input shaft seal causes, just slower. Plus I don't think anyone wants to clean all that lubricant off their airplane or emptying an overflow tank frequently and refilling the gear case on a regular basis.

The primary reason for putting the breather in the removable upper case cover was to eliminate the need to drill and tap the lower case risking bits of aluminum getting into the lubricant. There are several ways to reduce the amount of bits getting into the case like grease on the drill bit and tap, using a vacuum to suck away bits, and then flush out any bits that do get in. Tear down and re-assembly of the gear box on the aircraft is impossible and it is not an easy task on the bench to get all the parts properly installed, which is why Bud's warranty was voided if the case was opened.

We know that tapping a hole in the upper port side of the lower case above the current breather hole with the new breather will work, but it is a lot of effort with some risk that the aluminum bits generated could cause other damage. So Larry and I have come up with some other options.

The first option is to use a different type of breather in the top cover plate that should work a lot better, but we don't know if it will work well enough during those moments when the upper case is pressurized with lubricant. Larry knew that Bill Gibson's RV-10 was scheduled for an annual inspection the first of March. So I asked Bill if he will allow us to use his gear box to test this new breather while it was down for the annual and he agreed. This also gives us time to get the new parts delivered and ready to install. Larry will install the input shaft retainer, the new breather in a new top cover plate, plug the old breather hole, and test it. Based on those results we will know which direction to go. While waiting for those results I am working on other options if needed.

The next option will be to develop an external retainer for the propeller shaft seal and leave the old breather in place. With both seals retained and regularly flushing the old breather out will also solve the problem.

Bill Gibson also told me that he has issues with his old breather leaking at the bottom fitting. He felt like there may be too much weight and vibration on the bottom of the breather and the elbow fitting into the case. A bracket to support the upper end of the breather should help. If others are having the same problem let me know. If a top support bracket isn't enough to fix it and the leaking is too common then putting the new breather on the upper side of the lower case may become the only solution.

Watch for an announcement on the results of testing the new breather on Bills BW350 in March.

Thank you,
Stuart Davis