

Paper, Props, and Pumpkins

Complying with Hartzell Propeller AD97-18-02

By: Chuck Clemen

I had just returned home after my airplane's annual in September, 1997 and I was opening the mail that had accumulated when I came across a note from the FAA in the form of AD97-18-02. I scanned through the new AD and found that it applied to my propellers. Further investigation revealed that by September 11, 1999 or 200 hours time in service, whichever came first, my propellers would no longer be capable of legally pulling my 310F through the air unless I did something that sounded like it would involve me parting with a lot of money. This AD applies to all of us who fly models 310 through 310H, 320 through 320B and certain 400 series models, all of which use Hartzell propellers. My immediate action was to give Larry a call to find out what was going on. Larry had also been surprised by the AD and was already working with his contacts at the FAA. He did confirm that indeed, these few pieces of paper would turn my propellers into pumpkins by September, 1999. His advice was to wait and see what options would develop for reworking the old propellers or replacing them with newer ones. The AD only allowed for repetitive inspection of existing blades, clamps, and hubs which did not solve the problem, just increased the probability of finding the failure before it turned into a disaster.

In August, 1998, at the Defiance fly-in, Hartzell was in attendance with information pertaining to the AD and the failures that had caused the AD to be issued. The failures were occurring in the blade clamp. They had several examples of broken parts to show what was happening and how they were changing the design to prevent future failures. They had changed the design of both the blade and the blade clamp to eliminate the problems. Propellers built with the new design were designated "MV" propellers and the AD requirement for repetitive inspections does not apply to them. They also had developed a modification for old blades that would allow the installation of the new clamps. Propellers modified in this manner are considered upgraded to "MV" propellers and are also exempt from the AD's repetitive inspections. Also, by this time, both Hartzell and McCauley had STCs for newer designed propellers to be retrofitted to the affected airplanes. Hartzell's STC was a two-blade propeller and McCauley's was a three-blade.

So, by the fall of 1998, there were five options to consider.

1. Inspect and overhaul the existing

propellers and do repetitive inspections.

2. Inspect, overhaul and modify the existing propellers.
3. Buy new "MV" propellers.
4. Buy new Hartzell STC'd two-blade propellers.
5. Buy new McCauley STC'd three-blade propellers.

I thought the best thing to do next would be to understand the cost and pros and cons of each option. There are three propeller shops in my area so I started calling them. One never got back to me, so I ended up with information from two different shops.

Both shops estimated that the minimum cost to comply with the AD by inspecting and overhauling my existing propellers would be approximately \$4,500.00 for both propellers.

They both also placed high emphasis on the fact that it was unlikely that this cost would be realized. They expected that some of the blades, clamps, and possibly a hub would need to be replaced due to defects found by the new inspections. They also both agreed that a more likely final cost would be around \$9,000.00 for two propellers. Both shops would be glad to do the job but neither recommended this option. They thought that, even at the lowest possible cost, it was too much to spend without eliminating the repetitive inspections that could become very costly later on.

Both of the shops were much more supportive of the second option which involved overhauling and modifying my existing propellers to use the new "MV" design blade clamps. Cost for this option was approximately \$10,000.00 to do both propellers. After the modification, no further

inspections would be required. Both shops believed this modification was well worth the extra money and would be cheaper in the long run. The modification solves the fundamental problem by changing the blades so they can

Hartzell would also supply new propellers using the new blade clamp and blade design. This propeller is called the "MV" propeller and is the third option. The advantage to this option is that all parts are new. The new "MV" propeller is also, of course, not subject to the AD's repetitive inspections. The propeller is probably fine, the problem is the price, \$13,700.00 for two new at Hartzell's half-off sale. Both shops could sell me different propellers with STCs from either Hartzell or McCauley for the same or less money. Both shops felt that the STCs were a better option because the propellers being retrofitted were newer and better designs.

The fourth option is the Hartzell STC for their "compact" two-blade propellers. One shop would take my old propellers in trade plus \$11,000.00 for the new propellers. The other shop didn't want to take my old propellers but would sell me the new ones outright for \$12,000.00. This STC also comes with new polished spinners and back plates so everything from the crankshaft flange forward would be factory new.

McCauley's STC for three-blade propellers is the fifth option. I was quoted \$13,000.00 and \$14,000.00 by the two shops for this option. This STC also comes with new spinners and back plates.

As I thought about the different options, I concluded that new spinners and back plates are worth something in reduced maintenance costs. The old parts are expensive, difficult to find, and develop cracks regularly. I also thought that going to an improved propeller design had some value. The shop people I talked to did not seem to have a strong preference for either of the STCs. They both felt that either of the STCs was the best long-

use the new blade clamps. The blades have to be modified at specific shops that Hartzell had authorized to do this work and the down time would be increased by about one week.

term solution. I finally decided to go with the new Hartzell STC that would take my old props in trade.

Delivery of the new propellers was faster than I expected, about two weeks. They were installed in November, 1998 and I have about 75 hours on them now. Hartzell did not claim any performance enhancement and I have not seen any difference. There is a new restricted area on my tachometer though (red arch between 2100 and 2250 RPM). Operation between 2100 and 2500 RPM must be avoided with greater than 21 inches of manifold pressure. The propellers seem to run the smoothest at about 2400 RPM so the new red arch has not been a problem. The new propellers also seem to come out of feather smoother than the old ones after an air start. This is nice for training operations. The spinners turned out better than I expected. They are made of a heavier material and their mounting is more solid than the old ones. I'm hoping that this leads to less maintenance problems in the future.

Overall, I am happy with the new propellers and glad to be done with this one. The money is gone now so all I can do is fly and suffer the enjoyment that flying one of these great airplanes has to offer.