

# Wing Root & Landing Gear Door Seal Replacement

One of the oldest original components remaining on my Baron (and likely other members planes) was surely the stiff and ragged wing root seal. In researching this component I learned that the wing root and tail seals were installed on the wings and tails before the marriage to the airframe. What lies below the top skin of the wing and tail is a length of rubber “finger” (Figure 1) as an integral part of the seal.



Figure 1

This “finger” holds the seal in place and was likely glued at the factory, grabbing the backside of the wing and tail skin. With time and age these original rubber seals have taken quite a beating. With an extended winter annual downtime this year I chose to tackle this really tedious project while waiting for other components that were out for overhaul. A word of caution, this is as tedious as it gets if you choose to dig out the finger from below the top surface skins using the very narrow gap between the skin and the fuselage.

Here is a pирep from a Bonanza A36 owner on how he tackled his seal replacement:

“I cut the majority of the old seal off using razor blade, leaving a small lip sticking above the wing. I then used a small pick bent at a 90 degree angle, with about a 3/8" 'hook' on the end. Using the hook, I stuck it under the wing skin, between the skin and the old rubber wing seal lip under the skin, and forced it along the chord of the wing. This broke the rubber lip on the under side of the wing skin free from the wing. Then I fished out the rubber pieces that were now broken free. Once all of the old rubber was off, I cleaned up

the old glue using MEK. (Caution: MEK fumes can damage acrylic aircraft windows so use with care and in a well ventilated area or use an alternative adhesive remover like Goof Off, Citrasafe or Peerco 321) Now for the fun part - installing the new seals. From what I had read I was dreading this, but it went very well. I used Go-Jo hand cleaner for a lubricant, and was able to install both root seals without having to cut off the lip as some have suggested. The seal, when lubed with Go-Jo will fit in the narrowest of gaps using a little elbow grease. Just lubed it up, put the lip between the wing and fuselage, and using my fingers, was able to push the seal in to place. Again, nowhere did I have to cut off the lip, except over the wing attach fittings. When the seal was in place, I cleaned the seal and wing skin with a mild solvent to get the Go-Jo off, as well as to generally clean up the rubber. Then using masking tape to mask off areas where I didn't want to apply glue, I applied contact cement on the wing skin and rubber, and once dry, pressed it down for a good flat seal. It really looks great. Go-Jo is VERY slippery, and it worked extremely well as a rubber lubricant." Figure 2 and 3 show the seal installation results achievable using this method.



Figure 2



Figure 3

When tackling my wing root seal replacement project, I sourced a new silicone wing root seal from Gee Bee Products ([www.geebeeproducts.com](http://www.geebeeproducts.com)) for \$232, which included enough length to replace the upper and lower seal of each wing. The silicone seal product is reported to maintain its color over time as well as its durometer as it is much more resistant to hardening than rubber. In addition to a standard factory width seal, Gee Bee also provides a 3/16" wider than factory seal to cover any old paint lines that may lie below the old seal. If your Beechcraft is in for paint or rigging, the shop may be removing the wings anyway and new seals can easily be placed along the wing skins for a factory style installation. Gee Bee also produces the seals for the straight tail and ruddervator equipped Beechcraft. Their kits include clear silicone cement with separate catalyst, application brushes, gloves and razor blade for trimming.

Now for my shortcut confession, granted, the picking of the underside "finger" off the underside of the wing skin using 90° picks is truly the best way to go, however, in the interest of the time I had available, I chose to cut my old seal off with a razor at the top wing skin and leave the old "finger" in place while removing all the old adhesive from the top skin areas. I then carefully cut the finger from the new silicone seal and set about to glue the seal to the wing skin. I did not apply any glue to the section of seal that lies up against the fuselage as this piece of the seal is "snappy" and wants to naturally press against the fuselage.



The Gee Bee supplied adhesive is a two-part silicone cement that is extremely strong after the catalyst is added and the adhesive begins to cure and develop “legs”. Figures 4, 5 and 6 show the results of my silicone wing root seal install.



Figure 4





Figure 5





Figure 6

The underside was a little more time consuming because gravity was working against me which required allowing the cement to cure on about six inches at a time before moving on to cementing the next section.

After tackling my wing root seals I moved on to my landing gear door seals, again from Gee Bee in silicone material using the same aggressive two-part clear silicone cement. The main gear door seals sell for \$55 and the nose gear seal kit is \$35. These seals prevent metal-to-metal chaffing of the gear doors on the airframe. Clean surfaces are absolutely essential for proper adhesion of any seal materials to our airframes and the previously mentioned adhesive removal products do a great job. It's worth mentioning that while Peerco 321 is highly touted by many, it is only available in gallon cans at ~\$100/gallon. On request Gee Bee will provide 16oz portions of Peerco for \$35. PS: you'd be well advised to use the gloves when applying the clear silicone cement provided.

Again, to be clear, the shortcut method I chose should only be considered a temporary "repair", not to be confused with the removal of the OEM seal finger under the wing skin and properly installing the new seal with the finger under the wing skin. In reality, the only way to guarantee that the seal will remain in place as long as an OEM seal fitted at the factory is to install it like the factory did. Consider that you may have to re-do it at some time in the near term. What that near term turns out to be is anyone's guess and I was willing to roll the dice on the strength of the Gee Bee silicone cement. This shortcut is a repair, not a restoration that would be suitable for the Beechcraft Museum or winning a Lindy at Oshkosh!

Figures 7, 8 and 9 show my landing gear door seal install results. I took an unconventional approach on the main gear doors by applying the seals to the doors as opposed to the much narrower ledge in the airframe. My reasoning was that there was much more surface area to grab onto by using the door edge surfaces.





Figure 7



Figure 8





Figure 9

Figure 10 depicts a main gear well with the seals applied to the wing underside edges.





Figure 10

After 27 hours of flight in cloud, light rain and descents nearing 190KIAS my seals are still holding well in their locations.

These projects would be ideally tackled in conjunction with an annual, landing gear strut repair or winter flying hiatus where one has the aircraft down for an extended period of time.

Fly safe my friends!