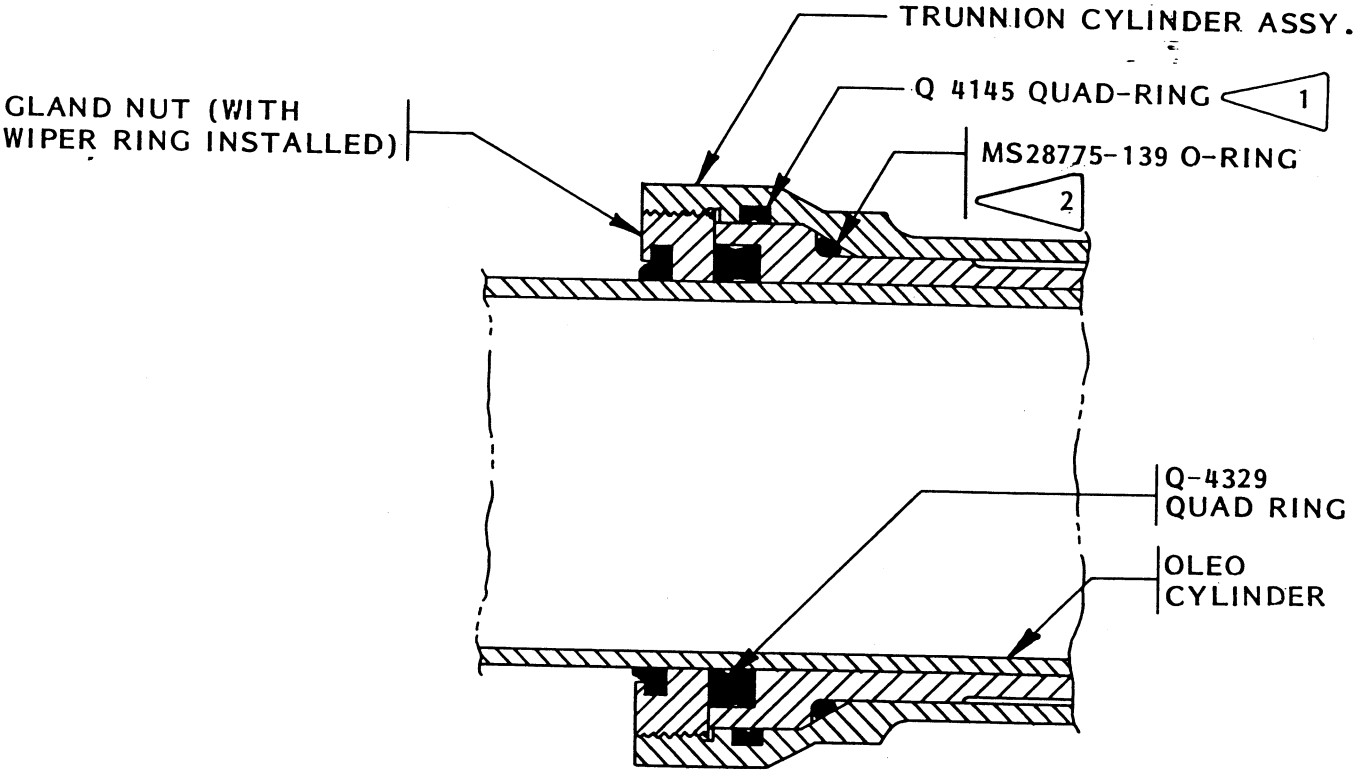
SERVICE BULLETIN 6A

SUBJECT: RG Gear Strut Leaks

APPLICATION: All Glasair RG landing gear struts.

DESCRIPTION: Service Bulletin 6, which was sent to you during the first week in August, described a solution to gear strut leaking which consisted of using a flat reinforced rubber washer between the gland nut and the cylinder bearing. Since then, we discovered that this method is not a foolproof method of preventing leaks.



SECTION THRU GEAR STRUT

FIGURE (1)

Our research and testing have isolated the source of the leaks as the small, outer sealing O-ring referenced by Flag No. 1 in FIGURE (1). This O-ring does not have enough surface area to form a good seal in every case.

SOLUTION: To solve this problem, we are machining another O-ring groove and installing an O-ring in the shoulder of the oleo strut cylinder bearing, as shown by Flag No. 2 in FIGURE (1). This extra O-ring will be compressed as a gasket during assembly. Our tests have shown this remedy to be very effective. For added protection, we will continue to insert an O-ring or Quad-ring in the groove referenced by Flag #1, in addition to the new O-ring referenced by Flag #2.

Our research and testing of the inner (dynamic) seal, including an investigation of the chrome finish, the gland dimensions, and the seal type, did not produce any significant improvement over the current design. A small amount of weeping occasionally occurs no matter which type of seal is used. We are reassembling all landing gear using the original inner Quad-ring seal with the addition of the crush seal on the outer face, as mentioned above.

When we machine the new groove in the cylinder bearings, we also reduce the outside diameter of the Nylatron (grey) cylinder bearings by about .004 inches (see Subject 3). This reduction in bearing diameter also makes it possible to reinsert the cylinder bearing into the trunnion cylinder assembly without the use of liquid nitrogen.

SUBJECT 2: Landing Gear Oleo Strut Internal Snubber Rings

(Unchanged from Service Bulletin 6.)

SUBJECT 3: Possible RG strut binding caused by thermal expansion of bearings.

APPLICATION: Subject 3 applies to Glasair RG landing gear sets with serial numbers 001 through 210.

DESCRIPTION: Glasair RG strut serial numbers 001 through 220 have cylinder bearings which are made from Nylatron GS. This material was chosen because of its low coefficient of friction. We have discovered that, over time, Nylatron absorbs moisture and will swell to a slightly larger size. This also requires the use of liquid nitrogen to shrink the bearings for reassembly.

Because of the extra care required in machining, storage, and assembly, we changed the bearing material to Delrin on strut serial numbers 221 through 300. Delrin does not have the moisture absorption properties associated with Nylatron and is easier to machine.

This past summer we had a few RG builder report to us that, during the hot summer months, they had incidents of their struts sticking and not operating smoothly. Our investigation into the problem revealed that at temperatures of 150° F, Nylatron bearings would bind but the Delrin bearings would not. Our theory is that the combination of thermal expansion and the moisture swelling in the Nylatron bearings is exceeding the allowances for normal thermal expansion alone. Further testing demonstrated that machining .004" from the O.D. of the Nylatron bearings eliminated any strut binding in the heated environment. Removing this material from the O.D. of the Nylatron bearings also makes it possible to reassemble the struts in the field without the use of liquid nitrogen.

SOLUTION: Since all bearings must be returned and remachined for the addition of the crush seal (Subject 1), all Nylatron bearings will be checked dimensionally for moisture absorption and remachined accordingly.

NOTE: Once machined to eliminate moisture swelling, the Nylatron bearings will function equally as well as the Delrin bearings. There should be no concern about any advantage of one over the other. We have 900 hours on our RG prototype N87SH (using Nylatron bearings) and have no plans to exchange the bearings now or in the future.

During our research into the oleo strut leakage problem, our discussions with seal manufacturers and aerospace strut manufacturers has led us to the conclusion that we should machine all future bearings from aluminum, which has an even lower coefficient of thermal expansion than the plastic bearings.

We mention aluminum bearings only to inform builders of future design improvements. Again, we are satisfied with the function of both the Nylatron and Delrin bearings and will continue to use both types on our RG airplanes. If any builders wish to order aluminum bearings, the price is $36.50 each. We must have all orders for aluminum bearings paid by December 15, 1985, in order to include them in our next production of landing gear parts. The bearings are expected to be complete by February, 1986.