

SERVICE BULLETIN 95

SUBJECT: GLASAIR III LANDING GEAR OLEO STRUT WELDED JOINTS

APPLICATION: All Glasair III landing gear oleo struts  
(Serial numbers 051 to 101 in particular)

DESCRIPTION: We recently received notification of a failure of the weld at the junction between the chrome oleo cylinder and the fork mounting flange (see illustration). The failure, which occurred on a customer's Glasair III nose gear, resulted in damage to the propeller and required an engine tear-down.

An inspection of the welded joint revealed that the weld had slowly cracked over time as indicated by rust along most of the severed joint and moisture and rust which had invaded the inside of the cylinder. We think that the cracked weld could probably have been spotted with more thorough pre-flight inspection procedures, although engine oil and dirt likely concealed the problem.

All Glasair III customers are advised to keep landing gear components clean, to inspect all welded joints during pre-flight inspections, and to inspect welds more thoroughly during periodic condition inspections. This particular problem is not limited to the nose gear strut alone; main gear components could, potentially, have the same problem. In order to best describe the possibility for a repeat of this type of occurrence, a history of the development and production of this component is outlined below:

First production run Glasair III gear struts (Serial Numbers 0 to 50)

On this initial run of landing gear, the weld that joins the fork attach flange to the oleo cylinder interferes with the fork mounting hardware. A bevelled washer was manufactured and installed to remedy this problem. The desire to eliminate weld interference with the fork attachment bolts led us to seek an alternative manufacturing method. Thus, we decided to post-machine the welds on the second production run gear struts in a manner similar to the Glasair I gear, which had been in service for years.

Second production run Glasair III gear struts (Serial Numbers 51 to 101)

The cylinder that failed came from the second production run of Glasair III landing gear. In this lot, the weld was post-machined to provide clearance for the fork attachment bolts. Possible causes of this failure could be uneven weld penetration compounded by post machining, weld cavities, etc. or an extra hard landing. A hard landing may cause a break or a crack in a weak weld. Subsequent takeoffs and landings could then cause the crack to propagate.



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Third production run Glasair III gear struts (Serial numbers 101 and up)

These third production run cylinders have the smaller radius welds to eliminate interference with assembly bolts, but use a different mounting flange design than the first and second production runs. Redesign of the mounting flange allowed a secondary weld to the cylinder on the lower side of the flange and eliminated the deep countersink that invited uneven weld penetration and weld cavities. (Refer to FIGURE [1].)

This Service Bulletin advises all Glasair III customers of this incident, although we feel the probability of a similar failure in the first production run of gear is low, and lower yet for the third production run. We believe that a design change is not necessary.

Our factory Glasair III, N540RG, has 1420 hours tach time (actual time is perhaps 10% higher). A few years ago we replaced the prototype main gear struts with a new set from the 2nd production run, and have accumulated 900 hours in service on this gear to date. We will continue to use these struts and inspect the welds during pre-flight and more closely at 100 hour condition inspection intervals. We expect that a visible crack would be detected before a catastrophic failure could occur.

We recently tested a 2nd production run chrome cylinder to ultimate load without failure.

It is difficult to predict the extent of the problem or the potential for failure for second production run landing gear. Therefore, we will advise but not require replacement of the chrome oleo cylinders for gear struts with serial numbers 51 to 101. The replacement cost of these components can be considered inexpensive insurance compared to the replacement cost of a propeller, an engine tear-down, or the cost of other components that could be damaged as a result of a gear strut failure.

As stated in the Glasair Purchase Agreement, Stoddard-Hamilton Aircraft, Inc. does not build a warranty cost into the Glasair products. Glasair kits would be priced substantially higher with such a contingency. For Glasair parts that do not meet a reasonable or expected service life, or that in other ways might prove unsuitable, our commitment is to replace such parts at the lowest cost to our customers and, therefore, offer them at a price equal to the cost for materials, labor, and processing alone, without profit.

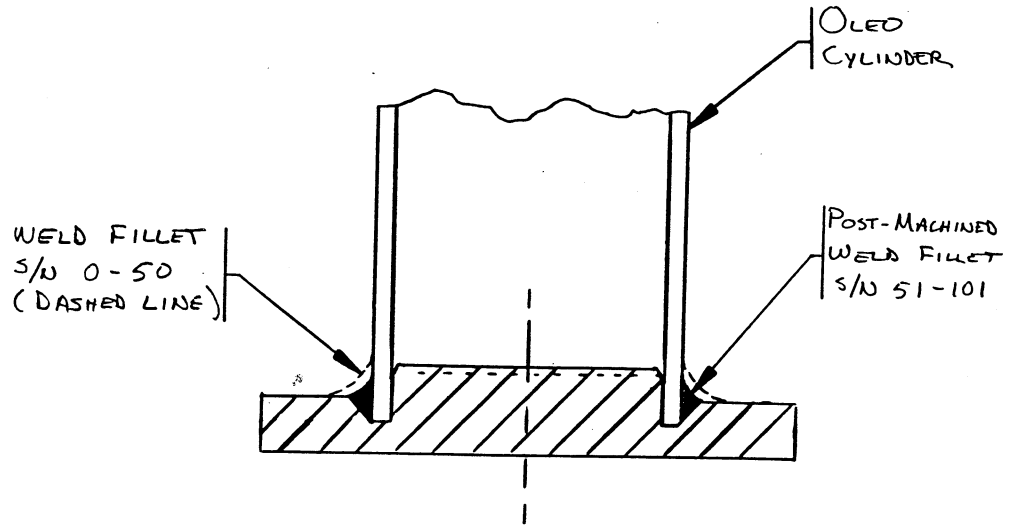
Since we stock only a few replacement cylinders, we will initiate a special production run of these parts for Glasair III builders who wish to upgrade their oleo struts to the most recent design.

The price for the replacement oleo cylinder is \$148.00 each. Oleo strut service instructions will be included with the cylinder. Seal kits are also available for the oleo struts if the builder wishes to replace the seals at the same time. The deadline date to order replacement cylinders is Thursday, 28 February 1991. For the nose gear, order part number 353-5360-101; for the main gear, order part number 353-5160-101. Our landing gear manufacturer estimates that it will take four months to complete the production run.

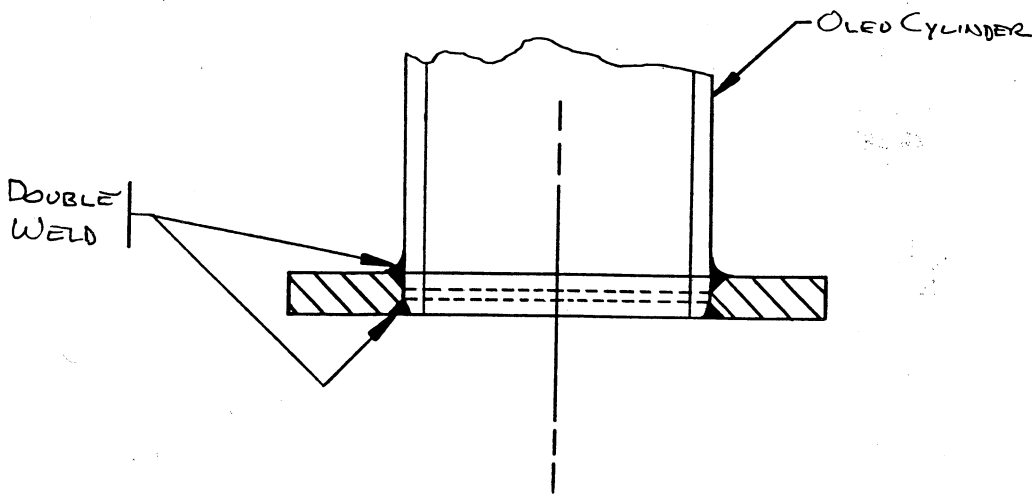
  
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As a final note, we urge all Glasair III builders to inspect all of the welds on critical components of the landing gear at regular intervals. The upper trunnion tube gussets, side brace attach studs, side brace bellcranks, etc. can be easily inspected during each pre-flight walk around. Don't limit close scrutiny to landing gear hardware, either. Keep a close eye on all critical components.



FORK ATTACH FLANGE  
SERIAL NUMBERS 0 - 101



FORK ATTACH FLANGE  
SERIAL NUMBERS ABOVE 101

FIGURE (1)

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