

GLASTAR SERVICE BULLETIN 50

MANDATORY

Subject: Inspection of main landing gear for proper heat treatment.

Applicability: Main landing gear delivered between November 1998 and March 1999.

Compliance Time: Non-flying aircraft prior to first flight, presently flying aircraft as described below.

Discussion and Background Information:

During the 2003 Arlington Fly-in, a Glastar customer reported that while en-route to the air-show on what was described as a semi-hard landing, his main gear bent and took on a permanent set. (The GlaStar gear was designed to fail - yield and take on a permanent set - before damage to the cage can occur.) No other damage occurred to the aircraft as a result of this incident. The customer replaced his main gear with a new one from the factory and he flew home.

These types of situations are often difficult to evaluate, since the description of the landing conditions can often be very subjective. Since this was deemed an isolated incident, New GlaStar LLC took no further action at that time.

Recently, we were informed that a customer's main gear bent under what he described as routine operating conditions, while performing taxi testing prior to first flight. We requested that the customer have his gear tested at a nearby heat-treating facility, which he did, and it was determined that the hardness values were well under those specified on the design drawings.

Upon receipt of this report, we initiated an investigation and discovered that these two customers took delivery of their fuselage sections (which includes the main gear) within 10 days of each other, back in January of 1999.

We then contacted the landing gear vendor and reported these two incidents and the findings. The vendor, who has been fabricating this type of gear for several aircraft companies and has fabricated several thousand of this type of gear over the years, tells us that the report of these two incidents are the first he has ever had of this type. According to the vendor, it is possible that a few of the gear struts could have been improperly racked or processed during the heat-treating process and, thus have improper hardness values compared to the rest of the gear in the batch. However, this is fairly unlikely. If a few gear were not improperly racked or processed, it is possible that an entire batch of landing gear did not receive proper heat treating.

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After a review of their records, the vendor reports that there is one shipment during this time period, which would be subject to concern, and it was shipped to Stoddard-Hamilton Aircraft, Inc., on November 30, 1998, and contained 30 main landing gear.

In this instance, due to the fact that GlaStar kit numbers are assigned by order date, we cannot specifically identify the kits (by kit number) that might have received landing gear that were delivered to Stoddard-Hamilton in the subject November 30, 1998 shipment. However, based upon the information available to us, we believe that, if you received your landing gear between the dates of November 1998 and March of 1999, you may have received main landing gear that are insufficiently heat treated.

Required Action:

1. **Prior To First Flight Of Your GlaStar:** If you have not flown yet, you are required to have your main landing gear tested for proper heat treatment.
2. **For Flying GlaStar Aircraft:**
 - a. If you are currently flying your GlaStar and have many hours with hundreds of landing cycles, it is possible that you do not have a problem. Notwithstanding, you must have your gear inspected/tested at your next annual inspection.

If you are currently flying your GlaStar and **do not** have many hours and have a limited number of landing cycles, you must have your gear inspected/tested prior to your next flight. **Hardness Testing:**

The process for determining the level of heat treatment in your landing gear is a non-destructive test that can be done at your local area machine shop, metal heat treatment facility, or possibly even at an automotive repair shop, as long as they have a Rockwell type hardness testing machine and staff with proper knowledge and experience in operating the equipment and reading the results. (The cost for this test will vary, but we expect it should be less than \$50.00.) NOTE: Hardness files should not be used to test your gear's hardness, as they are too unreliable within this range of harness values.

Hardness testing must be done in three or four places spread out along the length of the gear. In each of these areas, the surface needs to be thoroughly cleaned and free of paint. If you have already faired your gear strut with glass laminates or other non-removable structure, test the strut at the axle and at both the upper socket surfaces. Next, in the testing areas, the surface of the metal should be sanded or filed down between .002" - .005" to remove the effects of the shot peening. (Measure with dial calipers before and after sanding to verify.) NOTE: *If this is not done correctly, a false reading may result.*

The desired hardness on the Rockwell C scale should fall between 40 Rc and 44 Rc.

If you do not have a testing source available near you, you may ship your gear to New GlaStar, LLC and we will test it for you at no charge. (You will only have to pay shipping charges to/from New GlaStar LLC.)

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What To Do If Your Hardness Testing Reveals Inadequate Hardness Values

Should you find that the hardness value on your gear is below the minimums, New GlaStar will repair (by re-heat treating) or replace your gear.

Replacement cost will be \$225 per gear (plus shipping and crating charges). Gear that has been fairied with the non-removable structure will have to be replaced unless all traces of the fairing can be removed before shipping to New GlaStar, LLC.

Cost to straighten, re-heat treat, and paint the gear, depending on quantity, should be approximately \$150 per gear (plus shipping and crating charges).

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