

GlaStar/Sportsman Service Letter 8

Date: 08/19/09
Subject: Main Landing Gear Retaining Bolts
Applicability: All GlaStar and Sportsman Aircraft

Discussion: Since the GlaStar was introduced in 1995 and Sportsman in 2002, there have been two reported cases of main landing gear retainer bolts failing due to loss of directional control on the ground in the taildragger configuration. In both incidents, there was no injury to any occupants resulting from the bolt failure. Loss of directional control is commonly referred to as a “ground-loop” and is much more associated with taildragger gear configuration than tricycle. Also, recently we inspected a GlaStar tricycle aircraft that had been involved in an off-field emergency landing in which the left main gear had been severely twisted backwards. The retaining bolt was also sheared in a similar manner in this accident.


The GlaStar and Sportsman use the same style landing gear and method of attachment. In the 14 year service history since the GlaStar was introduced, the design has held up very well. It is worth mentioning that the Wittman-style gear used on both the Glastar and Sportsman (and the method of attachment) is nearly identical to that used on Vans RV type experimental aircraft, which also have an excellent record. Based on field data and customer accident reports that we’ve received over the years (as well as our inspection of several aircraft following *extremely* hard landings), we do know that the gear attachment performs well. In all but the three occasions that we are aware of, the gear bends long before the retaining bolt breaks.

In these occasions where gear leg retaining bolts have failed, it appears there were extremely high loads transmitted into the gear leg retaining bolts. A ground-loop can introduce much higher forces on the gear leg in a linear direction than that experienced in a normal or even hard landing. It is also possible that a combination of high torque and unusually high linear force is contributing toward these cases of bolt failure.

Unfortunately, it is not practical to design the gear installation to survive any and all conceivable loads that can possibly be encountered. Certified aircraft manufacturers are not required to design aircraft to withstand the forces caused by loss of directional control on the ground. Notwithstanding, now that we are aware of three incidents where the retaining bolt has been sheared we are suggesting GlaStar and Sportsman owners upgrade to an NAS bolt. NAS bolts typically have 25% greater ultimate tensile and shear strengths as compared to AN bolts.

While we believe the current AN bolt is sufficient for all “normal” landings with the aircraft under positive directional control, the NAS bolts will provide greater shear margin in the event a ground-loop is experienced. **Please note: We have not tested NAS bolts under these conditions and cannot make any guarantee they will not also fail under the extreme side load conditions when loss of directional control on the ground is experienced.**

To order NAS6605-30 bolts, email parts@glasairaviation.com or call 360 435 8533 x1

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