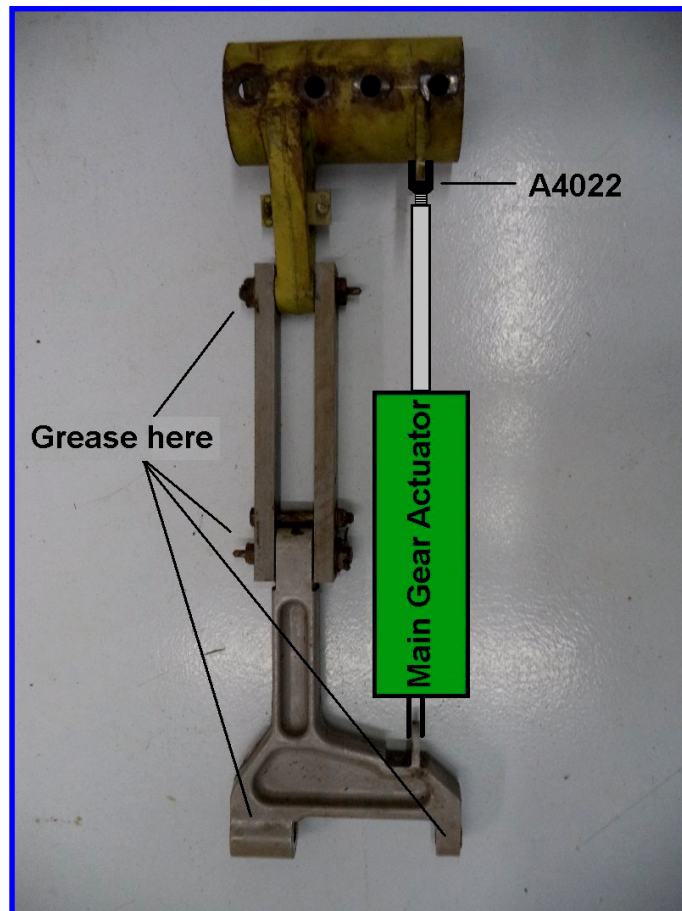


MAIN GEAR FORK (RPN A4022) FAILURE

(Ed note: I received this from a member. It is worth checking, as the main gear system is critical for safe operation on land and water.)

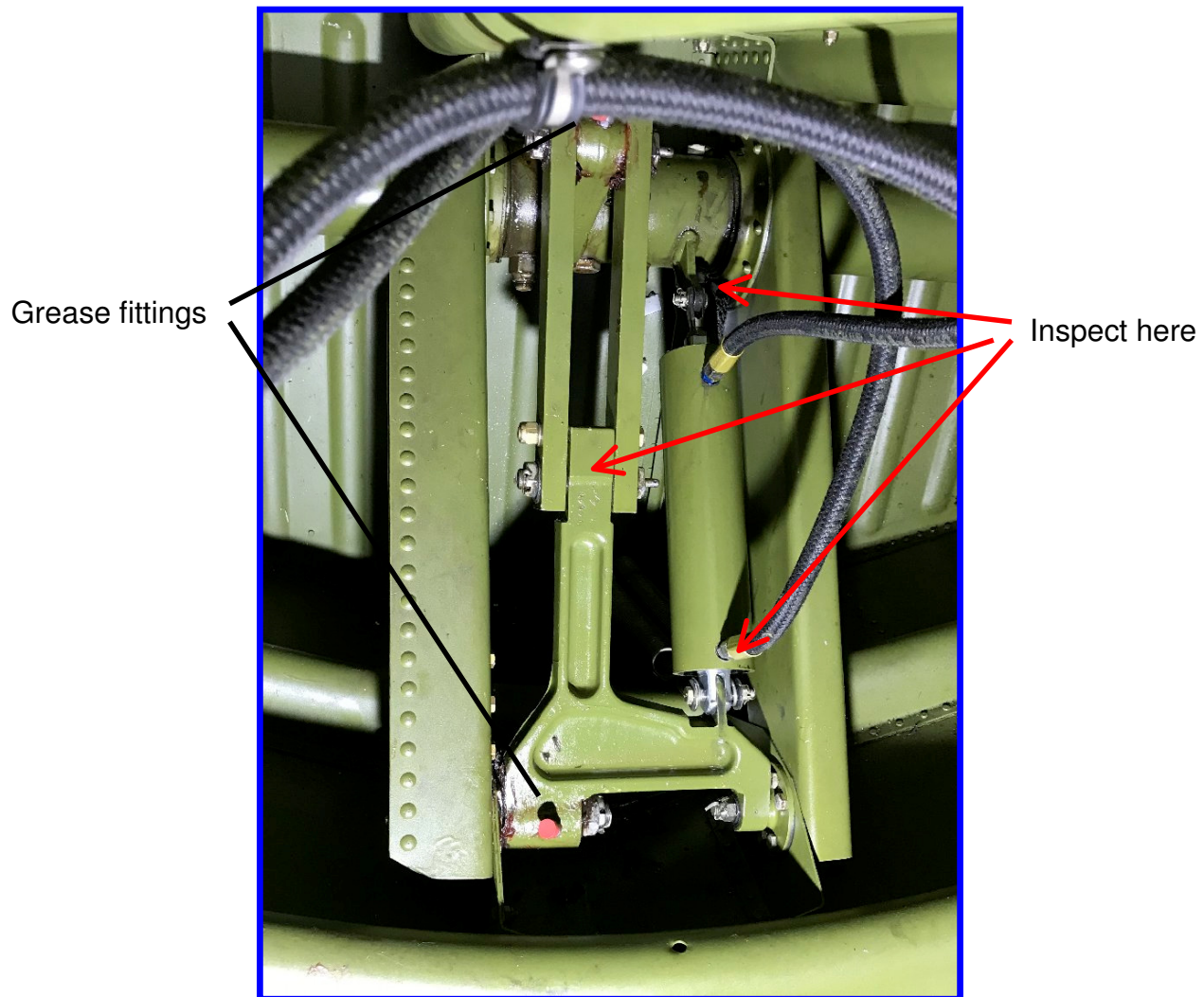
Electrol Company, the same company that produced the entire hydraulic system in our Seabees, originally designed Republic Part number A4022. For those of you who have ventured under the back seat, you may have noticed the relatively small fork end on the top of the main gear actuator that is connected to the landing gear cross-tube coupler. That's part A4022. Under normal conditions it is more than adequate to operate the main gear but can be compromised if conditions are less than normal.

If the landing gear is "in transit", that is not up or down, any obstacle that hits the main wheels before it locks down can crack or break this part. There have been a few stories from the past that had pretty severe consequences including a gear up landing at an airport and even a punctured fuel cell after the actuator rod was forced through it. Needless to say this part is critical and its integrity must be confirmed. Each Annual Inspection should include a detailed inspection of the main landing gear operation and condition.



Main gear linkage

During this “Annual”, check the landing gear linkage and all components for wear. Any sign of wear or cracks must be fixed. Operate the landing gear a couple of times while looking at the mechanism. Notice if there is any play in the pivot points or in the actuator fork and cross-tube coupler. Make sure the gear links go “over center” and locks. Be sure that the mechanism is lubricated liberally with grease and oil as depicted in the Republic Seabee Owners Manual (Pg. 36 and 37). Most landing gear systems have grease fittings on them, which are not easy to reach but must be done. A longer than normal grease gun tube may be required to reach the fitting. Some linkages do not have grease fittings (shame on Republic!) so you might consider installing some. If not, a copious amount of oil will work.



Inspect Gear Linkage

Not only is the A4022 part suspect but we recently had a member crack the control horn on the cross-tube where the actuator fork attaches! The fork didn't break but the control horn did! Luckily he was able to land at an airport where temporary repairs could be made.



Another member sent this in just a few days ago:

“What caused it to break, I think, is that even though I had a good gear down light as I was preparing to come up my ramp, apparently due to bushing wear in the pivot points and high power required to counteract strong crosswinds, the hydraulic system was not strong enough to get the gear over center. Because of the relative steepness of my ramp, the wheels tried to fold back upon contact with the ramp putting high stress on the clevis (A4022) instead of the over-center link. If I had been landing on a level runway, contact would have forced the gear forward and it would have gone over-center. The clevis did its job in that it broke rather than the attach fitting on the landing gear (cross) tube bell crank. This isn’t the first time I have the gear fold backwards trying to go up the ramp. If the contact is slow enough the gear can fold back and lift the hydraulic system relief valve, which helps prevent parts breakage. The key I think is having minimal wear in the bushings, which can result in bottoming the hydraulic cylinder before the gear gets over center. This has caused breakage in the tab on the H-brace or the H-brace itself (I have had both happen over the years). I think the gear hydraulic system design is marginal at best as it doesn’t take much wear in the bushings to cause the hydraulic cylinders to reach full travel before the gear goes over-center in either the up or down position. Hope this makes sense to you.

Moral of the story: Inspect the main landing gear mechanism any time the back seats are removed. Lubricate them at the same time. Check for wear and cracking. Check bushing wear at all pivot points. With the Seabee in hull stands, make sure the linkages lock over center. Wiggle the gear by hand and check for any play in the gear mechanism (this is a two-man job). Did I mention lubrication?

The landing gear mechanism is designed to be very strong once the gear is either down or up but the weakness is “in transit”. If you are on the water going up a ramp or even beaching, get the gear down early and make sure it is locked down.

Thank you to the members that shared their experiences. This may save you from a similar fate.

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