Top Comanche Landing Gear Watch List:

You can check these yourself and/or bring to your A&P. These issues are worth checking – they are usually fine but can cause real trouble.

ISSUE	BAD [photo]	GOOD [photo]	FIX COST/TIME
Gear scissors linkage incorrectly installed / installed backwards. May shear bolt on hard landings resulting in loss of directional control*. Can occur or mains or nose gear.	Incorrect: [**photo**] flange lines are approx. perpendicular (+). -Scissors flanges can strike each other when strut compresses -May damage flange, cause binding, and stress bolt. -If bolt breaks, mains pivot 90. Nose **may** castor ok.	Correct: [**photo**] flanges roughly parallel (=). Scissors halves can move freely around the bolt to allow the strut to compress.	<1 hour – remove 3 bolts, put it back together so flanges are parallel, reassemble
Scissors linkage torque bolt has too many washers between scissors halves. Results as above.	Incorrect [**diagram**]: -More than 4 washers **Or** -Less than 1 washer	Correct [**diagram**]: -2 or 3 washers between scissors halves	10 minutes
Upper Torque bolt installed backwards – can cause gear to bind	Incorrect [**photo**] Head of bolt towards edge of gear bay	Correct [**photo**] Tail of bolt towards gear bay	10 minutes
Left trunnion sometimes cracks (inspect the back web of the trunnion).	Bad [crack] [**photo**]	Good [**photo**]	SMB industries can rebuild with a thicker web. **Or** Get an Australian trunnion
Check that your nose gear has twin springs. These should be clearly visible aft of the strut. Some of the fleet has only one spring.	Only one spring installed. [**photo or diagram**]	Both springs installed [**photo**]	Zach – if the second spring isn't installed is it a problem for gear extension?
Struts low (under-inflated) – can cause gear to jam or damage wheel wells	Low [**photo**] Struts must extend or gear won't be centered in wells. -At best will pop breakers. -At worst will get stuck and fail to extend	Good [**photo**]	5 minutes
Sheared nose gear stops (broken off) – can mean damaged rudder fittings. -Nose gear stops restrict turns to +/- 20 degrees -Nose gear connections go all the way back to the rudder brackets; overturning can actually crack those.	Sheared [**photo**] - Happens when a mechanical tug pushes it and it jackknifes. -Hand towing is ok -Half of the fleet has damaged or sheared stops.	Intact [**photo**] -Specify DO NOT TUG to FBOs. **Or** -Remove the cotter pin [photo #2[	$2500+ to re-weld and machine back to correct shape HINT: Replace cotter pin with magneto clip (like a square safety pin). ***Fasten clip to the yoke when not in the place, so you always replace it!***
Worm Gear worn The worm gear moves	WORN: When you raise/lower the gear, follow the emergency	GOOD: Smooth travel	???

each time your gear retracts/extends. It may develop a worn spot over time. This needs fixed before it gets bad or gear may bind and fail to extend.	gear extension arm with your hand and feel for a bump as it travels,		

*Topic #1 "hard landings": a hard landing, severely compressing the oleo strut(s), is what delivers the high stress to the scissor assembly when the incorrect position of the milled areas bottom out, shearing the bolt in the knee location. A normal landing, which does not cause the assembly to bind, will feel just fine. Of course, once the assembly has failed the next landing will most definitely be unpleasant.

Topic #2 nose vs main scissors failure: in both cases the gear no longer has directional control; the lower portion (wheel) is free to spin on the oleo strut. With the nose linkage failure the wheel might tend to continue to roll in the direction of the aircraft due to the castor effect of the f0rward leaning strut, and some steering control might be available through differential braking (older hand brake models are out of luck). With the main gear, being roughly vertical or aft leaning, the castor effect would tend to turn the wheel perpendicular to the direction of travel, resulting in a locked brake effect and strong adverse yaw. Both failure modes are equally dangerous, but the main gear scenario is unrecoverable.

OTHER GEAR MAINTENANCE TIPS AND TRICKS

1) Get into the habit of following your emergency gear extension lever as it travels when you put the gear down, and/or watching the ammeter. If you feel a bump in the travel, or see a jump in the ammeter, your worm gear is going bad.
2) Change your bungies (every 1-2 years if outside, or every 2-3 if hangered). They are only $25-$30 each (you need 2) and they save your gear motor. The “Bogart” tool works really well. Less than an hour of labor for both (The super-experienced can do it in 10 minutes but you don’t want to hurry)
3) Check that the brake mod has been done, since it gives a few knots airspeed due to less drag (Zach can you explain this?)
4) On really cold days, you might want to push on your gear handle as it completes travel, to help your gear motor on those last few inches of retraction.

Also: Engine mounts (“Lord Mounts”, because they are manufactured by Lord) will cause excessive vibration, especially on the twins, so replace yours every 4-5 years (sooner if they are on the ramp, longer if always inside). Mounts themselves : 4 on each engine, and $150/mount, and 1.5 to 2 hours labor. Don’t have to pull the engines to replace the mounts, just need to support them.

NOTE: We need to send this to ALL Comanche owners, not just ICS. We can include an invitation to join.