

WPR18LA221
Aerometals Differences Questions
MD369 Tail Boom & Tail Rotor Gear Box (TRGB)

#	NTSB QUESTION	AEROMETALS RESPONSE
1	What was the reason/rationale for switching the attach hardware scheme for TRGB to Tail Boom from studs & nuts (MDHI) to nutplates & bolts (AM) (both 1/4-28)	There was an AD (AD 88-17-09R1) against the MDHI Model 369D, E, F, and FF helicopters with tail rotor transmission mounting studs installed. The MDHI design used studs threaded into a cast aluminum gearbox attachment frame. The MDHI frame material securing the studs was prone to failure. The Aerometals design has a structurally superior gearbox attachment frame machined from 7050-T7451 aluminum plate. In addition, the Aerometals design replaced the MDHI studs and nuts with higher strength (180ksi) MS21250 bolts and MS21075L4 cad plated steel nut plates.
2	MDHI original guidance specifies Primer on studs & in holes MDHI SB DN-151 specifies primer on studs, holes, & faying surfaces AM AMI-19 specifies Primer on bolts AM SB-001 does not address Primer at all Q: What are the reason(s) for differences b/t AM-specified locations & MDHI guidance?	The Aerometals ICA requires primer to be applied to the bolts and the bolts installed wet through the transmission mount holes and into the gearbox attachment frame. Although it does not specifically require primer in the hole, installing the bolt wet with primer will result in the same protection. Similarly, some primer will end up being applied to the faying surfaces surrounding the hole, thereby protecting the fasteners from corrosion.
3	MDHI initial torque on installation is 75-95 in lbs + lock fastener drag AM initial torque is 100-110 in-lbs, w no ref to drag Q: What are the reason(s) for differences b/t MDHI & AM torque values? Q: What are the reason(s) for lack of drag callout?	The original certification documents do not specifically state why there are differences in the torque. However, I believe the additional torque of the Aerometals design takes into account the lock fastener drag, thereby simplifying the process. The certification data does state that the Aerometals steel bolt to steel nutplate attachment has a higher tolerance for over-torquing than the MDHI steel stud to aluminum thread design.

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4	Re the follow-on torque re-check values, MDHI specifies 95 (+/- 3 in-lbs plus drag), which is at the upper end of the installation tq AM specifies 100 in-lbs, which is at the lower end of the installation tq Q: what was the rationale for the re-check tq value? Q: what was the rationale for lack of tolerance/acceptable range? Q: What are the reason(s) for lack of drag callout?	Similar as above the higher torque value is likely to account for drag torque. I do not currently have an explanation as to why the re-check torque does not have the same tolerance as the initial. I will follow up on this one at a later date.