***-Engine Mount Bolts:***

-------- Original Message --------

Subject: [c-a] Bolt size

Date: Mon, 1 Oct 2012 07:10:38 -0700 (PDT)

From: DON JONES <djonesdnd@yahoo.com>

To: canard-aviators <canard-aviators@yahoogroups.com>

*“What is the bolt size for hanging the engine to a Dynafocal mount, the four bolts that attach the case to the rubber isolators?”*

Don Jones Berkut FG

-------- Original Message --------

Subject: Re: [c-a] Bolt size

Date: Mon, 1 Oct 2012 09:58:15 -0500

From: <berkut13@berkut13.com>

To: canard-aviators <canard-aviators@yahoogroups.com>, DON JONES <djonesdnd@yahoo.com>

*“For the 320/360 variants and Lord mounts:*

*2 ea AN7-43*

*2 ea AN7-44*

*-James Berkut/Race 13”*

-------- Original Message --------

Subject: Re: [c-a] Bolt size

Date: Mon, 01 Oct 2012 15:23:50 -0700

From: Marc J. Zeitlin <marc\_zeitlin@alum.mit.edu>

Reply-To: marc\_zeitlin@alum.mit.edu

To: canard-aviators <canard-aviators@yahoogroups.com>

David Froble wrote:

*“I'd just mention some things about grade 8 bolts. They are very strong in tension. But they are more brittle than AN bolts. For mounting an engine, I think I'd prefer something that would bend instead of crack.”*

*“...we have this discussion every once in a while. There are good reasons to not use hardware store grade 8 bolts, but strength/ductility isn't one of them.*

*AN bolts have a minimum tensile strength of 125 ksi (125,000 psi). Yield strength is somewhat lower. Yield strength is where the bolt starts to plastically (permanently) deform - tensile strength is where the bolt breaks.*

*Grade 8 bolts have a yield strength of about 130 ksi and a tensile strength of about 150 ksi. This means that under the same loading conditions, the grade 8 bolt won't have even started to plastically deform, while the AN bolt will already have broken.”*

**Froble:** *“In general, with the exception of high tension areas, such as bolting an engine together, I'd suggest avoiding grade 8 bolts in an aircraft.”*

**Zeitlin: *“****I agree with the admonition to not use grade 8 bolts, but my reasoning stems more from the lower likelihood of having traceability of the metal and manufacturing, and more so from the fact that the threaded portion and shank of the bolt may not be appropriate to ensure that shear and bending stress is taken by the unthreaded shank, rather than by the threaded section. With AN hardware you know what you're getting from a geometric and material standpoint more than with hardware store bolts.”*

-------- Original Message --------

Subject: RE: [c-a] Bolt size

Date: Mon, 01 Oct 2012 19:40:41 -0400

From: Ken <kenezmiller@optonline.net>

To: marc\_zeitlin@alum.mit.edu, 'canard-aviators' <canard-aviators@yahoogroups.com>

*“...not the bolt that is the problem with Grade 8. They ...have worked for eons in prop applications. ... I remember when some suppliers for the homebuilt group shipped them as prop bolts.*

*The problem is the threads. Grade 8 and any other hardware store bolt has cut threads. They are cut into the bolt. Aircraft bolts have rolled threads, meaning the threads are extruded under high pressure to form the thread rather than cut it. This reduces the risk of failure due to stress risers in the bottom of the thread wells when they are cut into the metal.*

*Saber Engineering sells bolts for props and other applications. They are actually grade 9 (Super 9) bolts manufactured in Germany for those incredible roller coasters they design. They are super ductile and have rolled threads and are much cheaper than aircraft bolts. I have used them for over 25 years and recommend them highly. No failures in thousands of hours.”*

***Saber 2020****: “It is all true except they are made in the USA. Yes, and for drill heads for gas and oil production and lots of other high stress applications”*