**From:** [redacted]
**To:**
**Subject:** Re: NTSB ID# ERA21LA127 Thonotosassa, FL Vans RV-7, N611E
**Date:** Wednesday, March 10, 2021 4:39:38 PM



1. The t-fitting hose configuration was your design and install in order to plumb fuel to the fuel pressure transmitter/fuel pressure gauge? Yes. The oil cooler was located very close to the engine fuel pump. Normally I would have used the 90 deg elbow with a hole at the elbow of the 90 (which would have pointed at the oil cooler) to attached the fuel pressure line but the oil cooler was about an 1" away from the elbow so it could not be used. If I had not found the black fitting that was in the video I would have used the original 90 deg elbow, that didn't have a hole for the fuel pressure line, and would have tapped a hole on the elbow facing the firewall in order to attach the fuel pressure line. It's difficult to explain in words so I'll be draw what I mean so you understand what I'm trying to describe and send it to you later this evening.
2. Where was the t-fitting sourced? I got the AN fitting, which was a 37 deg flare and verified by Mark Keefer to be 37 deg flare, from a pro shop for cars
3. Where was the fuel line sourced? The fuel line I believe came in the box from the engine manufacturer which was made from a company in Arizona that builds A/C fuel lines to TSO standards. One end had a 90 stainless steel elbow and the other end was a straight. If it didn't come from the engine manufacturer than it came from the firewall forward kit from Vans but I'm almost positive it came from the engine manufacturer. The fuel pressure line was sourced from Van's from the firewall forward kit. Both fuel lines were still attached to the black fitting. It was the black fitting that disconnected from the fuel pump elbow both times. Also, if Mark didn't mention it, the jam nut on the fuel pump elbow was still tight in case you wanted to know.
4. Are either or both of these items to AN/AND/AS/SAE standards? Both the black fitting and the fuel line are AN. The fitting is Aluminum and the fuel line was stainless steel
5. Were the hose and t-fitting manufactured to different standards? In other words, Is one AN and the other SAE perhaps? Both AN and both 37 deg flare.
6. Do you have pictures from your build log on the t-fitting and hoses? I only have pictures of them after removal. The 'T' fitting was something I did due to the close proximity of the oil cooler. Obviously I thought it to be ok to use and didn't think of the fitting being sufficiently torqued to loosen since both the fuel and fuel pressure lines were flexible. The fuel line in the video is actually the fuel pressure line. However I can get you the fuel pressure line which is still attached to the A/C.

On Wed, Mar 10, 2021 at 3:47 PM Rayner Brian [redacted] wrote:

> Hello Daren,

Before I address what you have outlined below, I want to review a few things.

1. The t-fitting hose configuration was your design and install in order to plumb fuel to the fuel pressure transmitter/fuel pressure gauge?
2. Where was the t-fitting sourced?
3. Where was the fuel line sourced?
4. Are either or both of these items to AN/AND/AS/SAE standards?
5. Were the hose and t-fitting manufactured to different standards? In other words, Is one AN and the other SAE perhaps?
6. Do you have pictures from your build log on the t-fitting and hoses? I only have pictures of them after removal.

Thank you,

Brian

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**From:** Daren Busciglio [redacted]
**Sent:** Tuesday, March 9, 2021 11:07 AM
**To:** Rayner Brian [redacted]
**Subject:** Re: NTSB ID# ERA21LA127 Thonotosassa, FL Vans RV-7, N611E



Hi Brian

When we spoke on the phone I believed you said your boss is an experimental guy. If you would please show him the video from Mark so he sees the fitting I used. I met with a guy this past Sunday who use to be a DAR. As soon as he saw the fitting he understood why it happened. He basically said the same thing Dan Horton said. Dan Horton is very well known on the Van's forum and very knowledgeable in many areas. If your boss is a Van's guy then he will certainly know of him on the forum. The DAR that inspected my plane saw the fitting but didn't think nothing of it along with another mechanic that was at the hangar where I had been working on the plane. I forget the term you used but it was

something along the lines of improper use of the the fitting. When you first look at the fitting and how it was connected/used I don't think it's initially obvious or general knowledge to the average mechanic.

My main interest is for the report to address that the vibration from the engine and the way the fuel and fuel pressure lines were attached to the black fitting which apply forces at right angles to the fitting is a very real possibility for the reason the fitting loosened from the fuel pump fitting elbow even though the lines are flexible. I feel Mark just dismissed that possibility for whatever reason.

I think if you look at this objectively knowing that it took approximately 3.5 hrs the first time for the fitting to loosen up and only 0.5 hrs the second time can you assume the fitting was torqued more the first time than the second time.

I believe I mentioned I had determined I possibly torqued the nut on the fitting to the minimum torque of 150 in-lbs or darn near to it. I'll re-mention it so if your boss reads this he'll understand how I determined it. I wanted to determine the torque value it would take to loosen an aluminum AN nut that was tightened to 150 in-lbs just to determine a base. Using a Snap-On digital torque wrench I tightened the the nut twice at 150 in-lbs and loosened it twice. It loosened both times within a couple in-lbs of each other at about 130 in-lbs. I then used a wrench and held it short approximately the length I had cut the wrench I used to tighten the fitting the second time. Just to clarify, the first time I had tightened the fitting I had more room to work because the exhaust pipes were not installed along with other items and was able to get to the nut from the back side.

In the field I had a good angle to pull the wrench towards me as opposed to pulling the wrench at an odd angle where your strength is reduced. I tightened the nut 3 times at 150 in-lbs and the nut loosened at 118, 138 and 131.

If you need to reach me you can call. [redacted]

Thanks

Daren

On Tue, Mar 2, 2021 at 3:23 PM Daren Busciglio [redacted] wrote: