Portland Area RV Builder's Group Newsletter

Issue 91.11

June 1992

Last Meeting, Group Happenings

During the last meeting, we mostly discussed the upcoming Fly In we are hosting this June 27th. Don Wentz collected names for preparing spaghetti, bread and other things. If you want to help with food and didn't get signed up on his list - - give him a call. We discussed several options for parking, drinks, and other issues — — I'm sure there are still some issues to be resolved this meeting. Last I heard from Bob DeVore, we had over 70 RSVP's for our fly in! EAA chapter 105 had their fly in last weekend in Scappoose and had a tremendous turn out, being our first attempt, we probably won't be as polished, but I expect a similar response.

I also received some good feedback and hints on my RV-4 fuselage under construction. It is nice to have a meeting at your house, you get lots of feedback all at once.

On a sadder note, the Questair venture that I reported had just flown in last months newsletter had a forced landing. Fortunately, the pilot was able to walk away (literally about 12 miles!) from the wreckage, but the plane was destroyed. It lost oil pressure and suffered engine failure somewhere down in Utah.

June Meeting:

This month we will really have two meetings, the first is Thursday the 11th at 7:00PM and we will be discussing final preparations for the fly in on the 27th. We will be at Kefton Black's hangar at Scappoose. Kefton's hangar is W2 #5, One of the blue set on the runway side. The next time we get together in June will be the actual fly in on the 27th.

Calendar & Miscellaneous

- June 27th 10AM - 4PM OUR FLY IN — if you haven't RSVP'd to Bob DeVore, do it by the 20th.

Don't forget, EAA Chapter 105 meetings are every month on the third Thursday, 7:00 PM at the PGE building, corner of Murray and Scholls Ferry Rd.

Tips & Tricks

I received a note from Dave Hull, the editor of the South Bay RVator concerning the article in last months issue on bolt torque. Dave goes into more detail on bolt preload and torque. Jeff commented that little torque is required for a fine thread fastener — — Dave counters that the preload isn't a function of thread pitch. The last thing I want to do is discourage people from submitting material for publication in fear that someone might find errors in it, but it is important to publish corrections, changes, or other opinions as well. I have included Dave's letter in this issue so that you can hear his comments for yourself. In any case, the main thrust of Jeff's article was to make sure that you torque all of the fasteners you need to and what could happen if you forget even one. So the point about thread pitch versus preload isn't a big issue, I just don't want to discourage postings in any way.... so thanks to Jeff for the original article and thanks to Dave for his comments. On the topic of articles, keep em coming folks. I have been receiving a fairly steady stream of submissions, and it has been great — this is your newsletter, the more you contribute, the better it will be.

Costco in Aloha has the small size Vise Grip brand quick-clamps for $15.00 for two, the cheapest I have seen them elsewhere is about $15 each. These aren't for everything, but they can be really handy for clamping larger items and are much quicker and easier to use than a C—clamp.

I was a little light on material for this months newsletter, so I threw in a copy of the ADC oil filter system brochure. If your engine doesn't already accommodate a spin—on, this is a competitively priced alternative that appears to have some other benefits as well.

Trading Post

- Technician available to assist you with your RV wiring. (Advanced circuit design to basic wiring) Reasonable rates. Gordon Lawrence. 638-6464.
- Landing lights for RV4/6/6A. Retrofittable, lightweight, clean, simple installation (under 6 hours). One or 2 lamp per wing versions. 55 Watt Halogen single unit $69.95, double $109.95 (add $7 per lamp for 100 watt). Complete kit includes plexiglass lense, location templates, all mounting hardware (no switches/ wire), detailed instructions Don Wentz, 50641 Firridge Ave., Scappoose, OR 97056 503—543—2298 for information/price list and photos. $10 discount for Builders Group members.
- KX170B Radio. Bonanza owner wants to upgrade. Has 2, one may be sold. Call Bob at 648-3697.
- Kefton Black has 1/2 of an end hangar available for an RV or similar plane at Scappoose, contact him at 621-3125.

The Portland area RV Builders Group newsletter is published more or less monthly. Subscriptions are $8/year. 1st issue free for new builders. Mail subscriptions, ideas, tricks, and articles to the newsletter publisher:

Steve Harris Newsletter
Publisher Rt. 1 Box
254A Banks, OR 97106
(503) 324-8131 Home

May 14, 1992

Steve Harris,

Thanks for sending along copies of your newsletter. It sure helps me get a feeling of being connected....to know other people are working, and succeeding on their projects. I don't know about your group, but it seems like few of our builders feel it's worthwhile to take the time to write anything down-and sometimes I wonder if it's worth the effort. But I guess since this is strictly a volunteer operation it's hard to complain about the help!

I wanted to comment on an article in your last newsletter concerning bolt torque and installation of fasteners. For all practical purposes, there is no difference in the bolt preload (tensile stress developed in the bolt by torquing) for a fine thread fastener versus a coarse thread for a given torque as Jeff stated in his article. The theory goes back to the basic equation

$T = KFid$ where T is the torque applied to the nut,
d is the nominal bolt diameter,
Fi is the preload, and
K is an empirical constant.

When mathematically derived, it can be shown that the constant includes factors such as threadform, pitch, coefficient of friction, etc. For small fasteners of various types, K is approximately 0.20, thus the torque is not reduced because of a finer thread. The torque value is selected based on many other factors such as nominal size, bolt material, nut material, type of applied loads, joint geometry, stiffness of clamped members (a gasket acts like a soft spring), coefficient of friction, lubrication, use of a locking nut or insert, use of thread sealant, and so on.... The reason a fastener should be torqued to the maximum value is to prevent joint separation, reduce the magnitude of the alternating stresses, and lessen the fatigue of the fastener. This concept is not generally understood without a detailed discussion and a free body diagram so I'll skip it here.

All of the torque applied to a nut doesn't go into developing preload. Some torque is used to deform the locking insert, some to overcome friction between the threads, some to overcome the friction between the nut and the washer. If the bolt and the nut gall the torque that should be converted into preload is being wasted on excess friction and the joint is not optimum. Bolts and nuts and any plating must be selected to control friction to the desired level. It is interesting to note that liquid

thread sealants (like Loctite®) act as a lubricant during assembly, and reduce the installation friction and variability. Finally, remember that failure analysis and design is a statistically based process. Since the exact loads and the exact strengths are unknown, a safety margin must be included. Each technique used to reduce the variability of assembling a joint reduces the chances of dipping into that safety margin. The safety margin is that thin strip around the envelope where the designer fears to fly....

A good method of keeping track of whether a fastener is installed and flight ready is to torque-stripe the nut. Torque stripe material, primer or even nail polish can be used to show that the nut hasn't moved since installation. Two inviolable rules: never stripe a fastener unless it has been torqued; and, any fastener that isn't striped isn't flight ready. Follow these two rules and it is much easier to prevent problems as well as catch them later.

Best regards,

Dave Hull, South Bay RVator
1136 Second St. Hermosa
Beach, Ca 90254
(213)372-5770

A V I A T I O N
DEVELOPMENT
CORPORATION

AN OIL FILTER THAT REALLY WORKS!!!

A Supplemental Type Certificate (STC) and the Parts Manufacturing Authorization (PMA) was awarded to Aviation Development Corporation to manufacture and sell a revolutionary new oil filter system for aircraft. The STC's as of this writing includes the following A/C models: Beech Baron B55 series, Beechcraft 33 - 35 - 36, Cessna 150-152-170-172-180-182-185-210, Piper PA 28 and PA 24 series, Grumman AA1 and AA5 series, Bell Helicopter 47 series, with other makes and models in various stages of development or completion.

The filter is new to aviation but it has been used with great success in high performance and racing circles for more than 10 years.

It was tested at the University of Utah against the best spin-on filters on the market and the results have been remarkable because not only did it filter out dirt from oil which had been run through a spin-on filter for quite some time, it also filtered out fibers which are part of the filter medium of the spin-on filter.

The ADC - OBERG Oil Filter System filters out particles as small as 3 microns and this leads to an obvious decrease in engine wear factors and therefore longer engine life.

It filters 100% of the oil 100% of the time until the screen is contaminated, and when this happens, the filter by-pass opens and a unique instrument mounted caution light comes on alerting the pilot, that the filter screen should be cleaned at the next convenient opportunity.

Besides its outstanding filtering ability, the ADC-OBERG Filter has other qualities not found in conventional filters, for example:

1. It is a one time investment. It has a stainless steel screen that should not wear out and therefore no need for replacement. The screen is cleaned with commercial solvents and compressed air.
2. The filter is a superb diagnostic tool. If you want to know what the engine is doing internally just open the filter, the screen tells all and no more mess in cutting open dirty spin-ons.
3. If your A/C engine runs hot, this filter will give additional oil cooling. An oil temperature drop of 15 to 20 ' was recorded on test aircraft and it can be more or less depending on installation
4. The filter has a build in full flow by-pass which works on a pressure differential. The screen fills up and the by-pass opens which in turn triggers a caution light alerting the pilot, to clean the screen and in doing so keeps the circulation of contaminates through the engine at minimums.
5. The filter is constructed from cast aluminium and is powder coated for a durable and attractive finish. It has been tested by the FAA to a working pressure of over 200 P.S.I, at a temperature of over 300 degrees which is many times above the parameters of most engines.

The installation is straight forward whether your engine has a spin-on or just an old style oil screen and takes about 3 to 4 hours depending A/C model.

For more information call or write to:

AVIATION DEVELOPMENT CORPORATION
1305 N.W. 200th • Seattle, WA 98177 • (206)546-3011

A V I A T I O N
DEVELOPMENT
CORPORATION

ADC - OBERG 600 SERIES OIL FILTER SPEC-DATA SHEET

FILTER BODY

Size:.....b"-6"-3 1/2"
Weight: .....4 1/2 lbs
Material:.....Cast Aluminium
Port Size:.....12 "0" ring (11/16-12)
Pressure Limit:.....500 P.S.I.
Flow Rate:.....36 G.P.M. at 65 P.S.I., oil at 180° ± 5°
By-Pass: .....Full Flow
Corrosion Protection:.....Semi Gloss Black Powder Coat

SCREEN

Size:.....5 1/2" O.D.
Material:.....Stainless Steel
Sea! Material;.....Buna Compound

ADAPTERS

Material: .....6061 T 6 Aluminium
Construction:.....Machining
Corrosion Protection:.....Semi Gloss Black Powder Coat

PRESSURE-TEMPERATURE FLOW TEST (FAA observed and verified)

Oil Temperature: .....300° Fahrenheit
Oil Pressure:.....200 P.S.I.
Duration of Test:..... 1 Hour, 10 Minutes
Result of Test:.....No Failure

PRESSURE DROP ACROSS SCREEN: (Highest Test Value Used)

(Oil temperature at time of test 180° ± 5°)
Inlet.....70 P.S.I.
Outlet.....66.8 P.S.I.
Pressure Drop ..... 3.2 P.S.I.

$395 for RV builders
Normal Price $450

AVIATION DEVELOPMENT CORPORATION
1305 N.W. 200th Street • Seattle, Washington • (206)546-3011

1st Annual North West RV Fly In
Saturday, June 27th 10AM-4PM
Scappoose, OR

Sponsored By Portland Area RV Builders Group

RSVP
By June 20th TO:

Attn. Bob DeVore:

Phone (503) 647-5717

FOB 281, North Plains OR 97133

FAX (503) 647-2206

FOOD WILL BE PROVIDED *ONLY* FOR RSVP's

80/87 & 100LL Fuel Available on Field

Scappoose (1S4) is located approx 15 miles NorthWest of PDX

45°46.3' North, 122°51.6'West

11NM off of 256° radial BTG VOR (116.6)

4000 ft paved runway, parallel Grass runway

Parking will probably be on the East side of the field, look for the squadron of RV's

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