



DESIGNEE NEWSLETTER

THE PUBLICATION OF THE EAA DESIGNEE PROGRAM



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The **DESIGNEE NEWSLETTER** is a forum for the exchange of information and ideas of interest to aircraft and ultralight builders, restorers, and flyers. The sources of the materials published are EAA Designees, readers, Chapter newsletters, and other publications. Readers are encouraged to submit manuscripts, drawings, and black/white photos for consideration. Every effort is made to select accurate materials of interest to a majority of readers. Opinions expressed and responsibility for accuracy rests entirely with the contributor. All materials submitted become the property of EAA — no remuneration will be made. Materials should be sent to Chuck Larsen, EAA Designee Director.

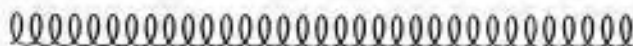
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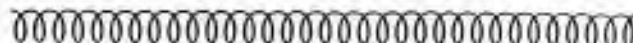
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Designee & Subscribers,

October foreshadows the changing season in many parts of the country. It also brings EAA Designees to the time of year when they must revalidate their status by completing and submitting the revalidation included with this issue. Those Designees not revalidated on this form or their Chapter's 1982 Status Report by January 1, 1983 will be considered inactive and no longer receive the **DESIGNEE NEWSLETTER** or other associated materials.

Chuck Larsen, Designee Director



IMPORTANT

Designee Revalidation included with this issue. Designees please complete and return to EAA, P.O. Box 229, Hales Corners, WI 53130.

TAKE NOTE

QUACKENBUSH NAILED BY CHEMICAL EXPOSURE

By Guy Veasey, EAA 52714

From the Orange County, California Chapter 92 HANGAR FLYER

We have all been warned before. Bill Bueth, Jim Warkington and Bill Northey have all given their horror stories of what various chemicals can do to the human system. Now we have another.

Frank Quackenbush, longtime active member, looked terrible Sunday, June 13, at Placentia-Linda Community Hospital. He walked slowly with a cane and hiccuped continuously as a result of liver damage. He nearly died earlier, but fortunately the worst occurred while in intensive care under expert medical attention.

It began Memorial Day weekend while doing a hurry job doping the tail feathers of his Vagabond. No rubber gloves or forced ventilation. A hand clean-up using the Poly Stits reducer seems to have triggered the event. First a headache, followed by severe dizziness. Fortunately, Patricia was at his side and got prompt medical help. Frank passed out and has little recollection of the five days in the intensive care unit.

Frank is now recovering at home. He emphatically points out that Poly Stits is not the culprit — lots of warnings and instructions on how to safely use the stuff. The doctors also told him not to take Tylenol when using these types of chemicals.

Mid-air and impacting the earth are not the primary threat to the well-being of our members — carelessness in using modern chemicals is!

NEW SURFACE TO AIR VISUAL SIGNAL CODE

From ON SCENE, The National Maritime SAR Review

The International Civil Aviation Organization (ICAO) and the Intergovernmental Maritime Consultative Organization (IMCO) have jointly adopted a new, and simplified, set of signals for use by survivors when signaling to aircraft. The new signals are only five in number, replacing a long standing group of eighteen signals.

The signals become applicable for aeronautical use on 26 November 1981.

The following figure shows the old signals and the new.

No.	Message	Code Symbol
1	Require doctor - serious injuries	I
2	Require medical supplies	FF
2	Unable to proceed	X
4	Require food and water	F
5	Require firearms and ammunition	∞
6	Require map and compass	□
7	Require signal lamp with battery and lens	!
8	Indicate direction to proceed	K
9	Am proceeding in this direction	↑
10	Will attempt take-off	()
11	Aircraft seriously damaged	⊔
12	Probably safe to land here	△
12	Require fuel tank	L
14	All well	LL
15	No	N
16	Yes	Y
17	Not understood	⊔
18	Requesting engine	W

No.	Message	Code Symbol
1	Require Assistance	V
2	Require Medical Assistance	X
3	No or Negative	N
4	Yes or Affirmative	Y
5	Proceeding in This Direction	↑

LETTERS 'N SHOP TALK



Dear Chuck,

Thought I'd mention a problem I just ran into on my RV-3 project. You might want to expand on it for a DESIGNEE NEWSLETTER article if you feel it's a likely problem.

I mounted my compass in the instrument panel, not the best location for it, but space limits the places it could have been mounted. All the instruments had been mounted for about a year before I discovered the problem. The compass was checked and swung before installation, just so I could see how much interference the rest of the panel would cause. The altimeter is just to the left of the compass. While "hangar flying" one day, I set the altimeter and noticed the compass changed heading.

In 500' the compass would change 30 degrees. A trip to the local watch repair shop and about 6 tries on a demagnetizer at various angles finally did the trick. All instruments should be checked before installation if the compass is anywhere close.

Sincerely,
Richard Pedersen, Designee 1079
Route 1, Box 186
Ladysmith, WI 54848

Dear Chuck:

A recent letter in the DESIGNEE NEWSLETTER regarding a gas gauge used as a turn indicator on a Howard DGA brought to mind an item for antique restorers.

On my Monocoupe, both wing tank gauge units are Model A Ford. Last year I ran into the problem of finding parts for mine, and I discovered that there are brand new replica gauges available, as well as all the component parts and the tools to install them with.

These may be available from several car restoration firms but I found mine at Rick's Automotive Parts, 2754 Roe Lane, Kansas City, Kansas 66103.

These gauges were used in all Monocoupes, Luscombe fuselage tanks, Aeronca Champ and Chief cowl tanks and auxiliary tanks and probably many others. In addition they could make a decent tank unit for many direct reading homebuilt gas tanks.

Willard L. Benedict, Designee #94
129 Cedar Street
Wayland, MI 49348

TECHNICAL TOPICS

LYCOMING SUGGESTIONS FROM THE LYCOMING SERVICE HANGAR

Lycoming service department suggests the following logical approach to the proper action to be taken when metal shows up in the oil screen or oil filter cartridge. What follows are meant to be general guidelines, but each case must be considered as an individual one. Avco Lycoming does not consider this discussion a technical bulletin, but merely a source of generally helpful information.

GENERAL INFORMATION

1. Don't panic on small amounts of shiny flakes or small amounts of short hair-like bits of magnetic material. Experience has shown that far too many engines are pulled unnecessarily.
2. Don't panic if it's a low time engine. A few bits of metal is not too uncommon in the oil screen or filters on new or remanufactured engines.
3. Don't panic. Again if it's a low time engine, it may be a replacement for one that had previously suffered a structural failure. The metal may have just been dislodged from some hiding place in the oil cooler, oil lines or oil tank.
4. Item 3 brings up the importance of properly cleaning all items transferred from a failed engine to a replacement engine. On dry sump engines, don't overlook cleaning of the oil tank. Oil coolers and oil lines should be cleaned by a proven method or replaced.
5. In some rare cases where the pleated cylindrical type oil screen is used, the screen itself may be making metal. Closely inspect the end of the internal relief valve ball. If the ball is deformed, this is probably the culprit. Replace the screen assembly.
6. In cases where metal shows up and its origin is unknown, the metal may be forwarded to the Avco Lycoming factory for inspection. The processing can be expedited by calling the factory service department when mailing material.

EXAMPLES

1. Several pieces of shiny flake-like, non-magnetic material, or several short hair-like pieces of magnetic material; place aircraft back in service and again check oil screen or filter in 25 hours.
2. As in item 1, but larger amount, such as 45-60 small pieces, clean screen, drain oil and refill. Run engine on ground for 20-30 minutes. Inspect screen. If clean, fly aircraft for 1 to 2 hours and again inspect screen. If clean, inspect screen after 10 hours of flight time. (Note: In cases one and two, we are determining whether the small amount of metal was a "one shot and done deal", not entirely uncommon.)
3. Chunks of metal ranging in size of broken lead pencil point or greater. Remove suction (sump) screen as larger pieces of metal may have fallen into the sump. In any event, ground aircraft and conduct investigation. A mixture of magnetic and non-magnetic in this case oftentimes means valve or ring and piston failure. Removing bottom spark plugs usually reveals the offending cylinder.

THE PAPERWORK

By A. L. McInnis, as published in *The Dalworth Chapter*
34 SKYWRITER

Among the least interesting things about building your own aircraft is coping with the required paperwork. Unfortunately, certain records, calculations, forms, etc. are required in order to properly (and legally) certificate your aircraft, so little choice remains except to complete the required paperwork as expeditiously as possible.

The following aircraft records are required:

1. Airframe logbook
2. Powerplant logbook
3. Equipment list
4. Weight and Balance information
5. Electrical Load Analysis
6. Parts and Materials records

The airframe logbook must be available at the time of each construction inspection and during the certification inspection.

The powerplant logbook must be available during the certification inspection.

An aircraft equipment list is required and must be current at all times. The equipment list should show the make, model and serial number for all major items of equipment installed in the aircraft along with their individual weights and moment arms.

The aircraft must be weighed on scales of known accuracy, following the procedures outlined in FAA Advisory Circular 43.13-1A, Chapter 13. The weight and balance information must be revised each time equipment is added, removed or relocated.

An electrical load analysis must be prepared showing that the maximum continuous electrical load does not exceed 80% of the generator or alternator output, as outlined in Advisory Circular 43.13-1A, Chapter 11.

Parts and materials' records consisting of invoices, receipts, etc. must be retained for verification of the quality of the materials used.

In addition to the above records and calculations, you must fill out an FAA Form 8050-1, leaving the nationality and registration marks blank. Submit this form along with the required fee as set forth in FAR 47.17, and a letter stating that you built the aircraft from raw materials and requesting that an "N" number be assigned. If a special "N" number is desired, list **three** choices. All of this should be accomplished at least 120 days before completion of your aircraft.

When you have received your Registration Certificate and your aircraft is ready for its certification inspection, you must write a letter to the FAA requesting inspection and including a description of your proposed flight test area. At this time FAA Form 8130-6 must be completed in duplicate. The FAA will notify you of the date and time of the inspection.

If your aircraft meets all requirements, an FAA Form 8130-7 . . . Special Airworthiness Certificate and Operating Limitations . . . will be used and the aircraft will be ready for flight testing.

After the flight test program has been successfully completed, you must apply for a recertification inspection, at which time the flight test restriction will be deleted and a new FAA Form 8130-7 issued.

A new Form 8130-6 must be completed, in duplicate, and the aircraft must meet all the requirements of the original certification inspection.

At the completion of the recertification inspection, if all goes well, a new Special Airworthiness Certificate and Operating Limitations will be issued, and your aircraft will be duly licensed under FAR 45.

CORNCOB GRIT CLEANS METAL, FIBERGLASS PARTS: REMOVES PAINT.

Excerpts from SME Report MR 81-396 presented at the deburring and surface conditioning conference, New Orleans, LA, 1981, by Dr. Kevin Foley.

As published in the Hartford, Connecticut Chapter 166 SPORT AVIATION NEWSLETTER

Corncob grit blasting has been used to remove paint and dirt from the outer skin of airplanes. The Confederate Air Force has used corncob grit blasting during the restoration of World War II planes. The Black Sparrow, a C47/DC-3 which is part of the Great Lakes Wing of the CAF, is one of these planes. The metal surface of this plane was not harmed by the corncob grit blasting during the restoration process. The large number of bolts used to attach the wing to the fuselage were readily cleaned with corncob grit, a job that is very difficult with conventional methods.

Many parts made of iron and steel are blast-cleaned by corncob grit blasting. As stated previously, corncob grit will remove loose rust and corrosion but is not capable of giving a white metal finish. The use of corncob grit blasting does not create an anchor pattern or does not destroy a previously existing one. Steel grating, exhaust manifolds, pistons, connecting rods, crank shafts, intake valves, exhaust valves and cylinder heads are examples of smaller parts that have been blast-cleaned with corncob grit. Smaller parts such as these are often cleaned in recirculating blast cabinets in order to reduce media costs.

Old paint, scum and even barnacles are removed from fiberglass boat hulls with corncob grit. Because sand can nick the gel coat on fiberglass boats, it is important to be certain that the blasting pot, air lines and nozzles are clean prior to use. With equipment such as rental equipment that is not routinely used for corncob grit blasting, it is recommended that one first check to be certain that the blasting pot is empty, then run air through the system for about one minute to assure that it is clean before adding corncob grit to the blasting pot. Instances where fiberglass boat hulls have been nicked by a corncob grit blasting operation invariably occur at the start of the blasting operation and can be traced to equipment that has not been cleaned before use.

The optimum nozzle was prepared by drilling appropriate holes in a 1-3/16" diameter steel rod 2" long as shown in Figure 3, reproduced below. The air inlet hole was tapped for a standard 1/8" pipe nipple and the media inlet hole was tapped for a standard 1/4" pipe nipple.

TECHNICALLY SPEAKING

By Ken Spratley, Designee 1121

From the Oshawa, Ontario Chapter 364's Newsletter

The fuel system is one of the most important parts of an airplane. In fact, a fuel flow test is one of the requirements before a homebuilt can fly.

Primarily, I am going to deal with the gravity feed system.

The tank must be located far enough above the carb to ensure sufficient pressure in all normal flying attitudes. Nose tanks generally have bottoms that slope to the center. This allows gas to flow when banking, climbing or descending. The tank that is placed in the wing cannot be sloped very much. An outlet, therefore, is usually installed front and back of the tank.

A quick drain must be installed in each tank at the lowest point when at rest. This allows the water that sometimes collects to be drained off.

The FAA tested one factory-built a couple of years ago, by pouring one gallon of water in each wing tank. Only part of it could be retrieved and even rocking the aircraft produced only a little more. The drains were in the wrong place.

The lines from the tank should be of sufficient size to stay ahead of the engine at full power.

There are many accidents on first test flight to fuel starvation. Lines should have gentle curves and gradually work down to the on-off valve. Kinks and sharp bends, especially up and down, can cause an air lock.

From the valve, the line should run to the gasculator somewhere on the firewall. Downhill all the way, but still above the carb.

One aircraft I recently visited had the line going under the floor to the valve then back up to the gasculator. This aircraft had fuel flow problems in the winter. No wonder, because there was no quick drain below the valve freeze under the floor. Water could collect at the low point and freeze.

Flexible lines should be checked for obstructions. At a recent meeting, it was mentioned the new hose that had a chunk of rubber inside which had been shoved up by a sharp fitting when manufactured.

Don't leave anything to chance.

Gauges should be as simple as possible. There have been many forced landings because of fouled up gauges.

Each tank should be vented in such a way that excess gas falls clear of the aircraft.

Tank openings should be protected against rain and caps should be weathertight.

DESIGNEE OF THE MONTH

**Peter M. Friedman, Designee 1071
4206 Glencoe Avenue
Venice, California 90291**

Peter has a masters degree in Aviation Safety Management, is an FAA Accident Prevention Counselor and holds FAA A & P and IA licenses. His flying certifications include commercial, instrument, ASMEI, CFII and the Advanced Ground Instructor, Instrument license.

In addition to the above, he is President of Aircraft Metal Products Corp., holds numerous STC's, a PMA and TSO authority. He completed a Cassutt racer (#69) which he raced at Reno and Mojave during 1977-78. He is listed in "Who's Who in California — 1981-82 and 82-83" as well as the new "Jane's Who's Who in Aviation" to be released in November of this year. He was the Safety Director for the EAA Chino Fly-Ins 1978-79. He has a Piper 235 used for business as well as a 1946 Ercoupe that is used just for fun! Several articles of his have been printed not only in the Designee Newsletter but several major aviation publications.

