



# DESIGNEE NEWSLETTER

THE PUBLICATION OF THE EAA DESIGNEE PROGRAM



WITTMAN AIRFIELD, OSHKOSH, WI 54903-2591  
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Paul H. Poberezny — Publisher  
Chuck Larsen — Editor



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.

#### Designees and Subscribers,

The EAA Headquarters Staff wishes you and yours the happiest of New Years. May peace and prosperity reside with you and all of the EAA family in 1984 and into the future.

1983 saw many milestones for EAA and 1984 holds the promise of the realization of expanded programs that will continue to reflect the quality and concepts based on our thirty one year reputation of standing for only the best in sport aviation activity.

EAA ULTRALIGHT '84 will open the fly-in activities at our Convention Site on June 15, 16 and 17 with EAA OSHKOSH '84 opens July 28th to fill Wittman Field with exciting aviation activity through August 4th. Foremost among the programs and activities being planned to emanate from the EAA Aviation Center in the coming year is the EAA Air Academy. The Academy will bring youth from 15 through 17 years of age to participate in a total emersion in aviation activity for the two weeks preceding the Convention week as well as all that makes up OSHKOSH '84. Write or call me at EAA Headquarters for details.

In our thirty-first year we will continue to grow to meet the needs of our membership while re-affirming our traditions of quality, camaraderie and action. We are THE Sport Aviation Association ... EAA.

Chuck Larsen, Designee Director

EAA AIR ACADEMY '84 will bring 30 enthusiastic, aviation oriented youth to the EAA Aviation Center in Oshkosh, Wisconsin to enjoy sport aviation at its best. Three weeks of activity will include aviation history, fabrication and the aviation extravaganza that is OSHKOSH '84.

This months issue of SPORT AVIATION contains details of this new and exciting program possible only at the EAA Aviation Center. If you have or know of interested youth, contact EAA Headquarters for information and registration materials.

We are also seeking qualified volunteer instructors experienced with sheet metal aircraft construction and benefactors to donate materials and supplies as well as scholarships for participants in EAA Air Academy '84.

Contributions to this EAA Aviation Foundation activity are tax deductible under IRS Code 170.

Contact Chuck Larsen at EAA Headquarters for further information and application materials.

## CONTENTS

Volume 15, Number 1

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Page

INTRODUCTION .....	1
EAA Air Academy '84	
The EAA Designee Program	
EAA's New Address	
LETTERS 'N SHOP TALK .....	2
Installing Carburetors	
What Advice Should EAA Provide?	
EAA Safety Committee	
Primary Aircraft	
EAA Aircraft Building Techniques - Wood	
Dent Removal in Sheet Metal	
Reference Guides to EAA Publications	
Free Engine Booklets	
Zenair Newsletter	
Monnett Service Bulletin	
New Metal Ribs For Older Pipers	
Aerobatic Bonanza Fix	
TECHNICAL TOPICS .....	3
Wires Tierods and Terminals	
"Yes" or "No" May Not Answer The Question	
DESIGNEE VISITS .....	4

#### THE EAA DESIGNEE PROGRAM

Designees are appointed based on their experience with aircraft repair and/or construction of homebuilt aircraft and the recommendations of their Chapter. A complete explanation of the program and applications for appointment as an EAA Designee can be secured by Chapters from the Chapter/Designee Office at Headquarters.

These selfless individuals of the EAA fraternity assist builders in preparing their project for the required FAA inspection. Designees efforts are recognized by the FAA as being responsible, in great measure, for the quality of workmanship in homebuilts as well as decreasing the workload of FAA inspectors by reducing the necessity of return inspections. The Designee acts as an advisor only and can in no way assume the FAA's responsibilities relating to aircraft inspection, approval or licensing. The Designee is a volunteer advisor, normally selected by a Chapter, who offers his or her expertise by providing guidance in the selection and construction or restoration of fellow EAAer's projects. Designees provide technical assistance and help the builder/restorer evaluate their accomplishments. They also disseminate information to their Chapter from publications including the EAA DESIGNEE NEWSLETTER, a monthly publication from EAA Headquarters which contains aircraft building and safety information. This publication is also available, by subscription to EAA members for \$10.00 per year.

#### EAA's NEW OSHKOSH ADDRESS

EAA	EAA Aviation Foundation
Wittman Airfield	Wittman Airfield
Oshkosh, WI 54903-2591	Oshkosh, WI 54903-3065
Telephone Number (414) 426-4800	

Please address communication to the Designee Office at the EAA address above.

# TECHNICAL TOPICS

## WIRES, TIERS RODS AND TERMINALS

By Dewey Ballard, Designee 1064 EAA 44706. From the EAA Chapter 200 Newsletter.

Recently, while I was visiting a Starduster Too project, the builder stated that he had created a bit of a problem. After the flying wire fittings were in place and the wings covered, he decided to use heavier wires than those specified in the plans. When the wires arrived he discovered the fact that the heavier terminals had larger clevis pin holes. If you do not have a set of AN specifications available, most of the catalogs have sufficient information you need to order wires and terminals, but you may have to piece it together from various pages. The chart has it grouped together. Although we refer to "flying wires", the proper name is "tie rods" and they are either streamline or round. The rods have AN numbers according to their thread specifications. You will note in the chart that a streamline wire has a greater rated strength than a round wire with the same thread size. I am not certain as to the reason but it is probably due to the reduction of the round rod diameter at the machined shoulder. Tie rods (wires) normally are manufactured with right-hand threading on one end and left-hand threads on the other. The right-hand thread is  $\frac{1}{2}$  inch longer than the left-hand thread. That allows you to get one end started before the other. All tie rod terminals are coded AN665 and have a dash number to indicate the thread size, plus an R or L to indicate thread direction. Usually, when you order terminals you ask for "terminal assembly" and the supplier will provide the proper clevis pin, cotter pin and locknut. Speaking of locknuts, on some antique airplanes with the original "bracing wires" (as they were once called), you might see terminals with both male and female threads on the

shank portion. The locknut will be threaded on the terminal rather than on the wire.

To compute the length of a rod, measure the distance between pin center positions and subtract the amount shown in column D below. The result will be the proper length with one half of the thread length on each end screwed into the terminal. In service the rod must always be screwed into the terminal past the small hole in the shank.

AN number	A	B		C		D	E	F	G	
		strin/round	strin/round	LH	RH					
671	701	6-40	1,200	1,000	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	-10R/L	.109	$\frac{3}{16}$
673	703	10-32	2,400	2,100	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	-21R/L	.150	$\frac{3}{16}$
674	704	$\frac{1}{4}$ -28	4,200	3,400	1 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$	-34R/L	.203	$\frac{1}{4}$
675	705	$\frac{3}{8}$ -24	6,800	6,100	1 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	-61R/L	.203	$\frac{3}{8}$
676	706	$\frac{3}{8}$ -24	10,000	8,000	1 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	-60R/L	.266	$\frac{3}{8}$

A, thread size; B, rated strength in pounds; C, thread lengths; D, difference between pin center length and rod length; E, AN665 terminal dash numbers; F, width of the terminal fork gap; G, pin hole diameter. The sizes listed in the above chart are the ones carried by most suppliers although AN665 terminals go up in size to a -760 which has 1-14 thread and a rated strength of 76,000 pounds.

In case someone should notice the absence of the AN665-46R/L terminal from the chart, it is an alternate for the -61. It has the same thread and fork gap but it has a  $\frac{5}{16}$  inch pin hole and a rated strength of 4,600 pounds.

## "YES" OR "NO" MAY NOT ANSWER THE QUESTION

By Rick Warren, EAA 77429. From the "President's Corner" of the Kingman Flyer, Chapter 765's Newsletter.

Design of amateur-built aircraft varies in sophistication from chalking an outline on the garage floor to computer assisted Finite Element Analysis. Outstanding and successful examples from both schools of thought can be cited at length. The common thread between design approaches is EXPERIENCE. Experience is acquired in one of two ways; through long term exposure to design solutions by others such as an A&P mechanic or from plans of homebuilders or through specific education and study of good design practices. Even though few take up the challenge of totally designing an aircraft; many will desire to be creative on a part of a project, rectify a project goof or remedy a discovered defect.

A designer/builder who finds himself on uncertain ground basically has a couple of choices. He can search through volumes of literature or he can seek the help of an "expert". Since proper interpretation and application of the literature is a concern even to an experienced engineer, the natural tendency is to consult an expert.

Too frequently an "expert" will be asked a technical question

about an aircraft sub-component to which a "yes" or "no" answer is expected. For example: "I want to install this widget in my Buzz Bomb Special; will it take 30 Gs?" The expert quietly inspects the part with a serious facial expression and thinks: Good Grief - 30 Gs; this widget appears to be a spar fitting; I wonder what a Buzz Bomb Special is, what it weighs, how fast it flies, how the widget ties into the structure; he must mean 30 Gs instantaneous rather than sustained; then again, maybe he plans routine flights through buildings!

So — the stage is set for an unsatisfactory conclusion for both the builder and the expert. The expert asks questions and poses so many qualifiers to his answer that the answer seems to be "maybe". The builder is frustrated because he has listened to a lot of technical mumbo-jumbo when all he wanted to hear was a simple yes or no; after all, didn't he ask a simple question? Both walk away from the encounter shaking their heads and doubting the intelligence of the other.

This scenario takes place so often that any action to promote better understanding between technical and non-technical experienced people would be worth the effort.

# LETTERS 'N SHOP TALK



## INSTALLING CARBURATORS

From Roy Clemens, EAA 87974, D/N 6686

Have you ever been faced with the problem of installing a carb on an engine? The studs are too long to allow you to push the carb up tight to the flange and let the nut and washer pass over the end of the stud, there is no room to get your fingers in to assemble the nut and washer.

When I install a carb, I cut a strip of metal (for quarter inch nuts the strip is about 3/8 inch wide and about 4 inches long) and bend a 3/8 lip on one end. For bigger nuts use a wider strip of sheet metal. With the lip facing up put a small dab of grease near the lip and place the nut on this, put a smear of grease on the washer and set it on the nut. Now prop, tie, or have someone hold the carb in place so that the studs are protruding through the flange just enough to allow the nut and washer to be slid into place on the metal strip. Use a long screwdriver to turn the nut the first turn, then tighten with an open end wrench.

It works for me!

**WHAT ADVICE SHOULD EAA PROVIDE?** is the topic of an article to be published in the January issue of SPORT AVIATION. We ask you read, consider and discuss the article "A GUEST EDITORIAL - Plans and Kits". We urge individual members, Chapters, Designees, designers, plans and kit suppliers to respond to EAA Headquarters as requested in the closing of the article.

**EAA SAFETY COMMITTEE:** The EAA Technical Safety Steering Committee met in November at the EAA Aviation Center. Committee members Charlie Schuck, Ted Slack and Harry Zeisluft, with Secretary Ben Owen, were assisted by invited guests, Bob Burbick, David Scott and Ken Bruck in the assessment of the progress that the Committee has been making. They discussed Ultralight accidents and Ultralight operations, and structural failure problems. They have decided to assist the designers of airplanes that have had structural problems by notifying builders and owners of any required modifications.

**PRIMARY AIRCRAFT MEETING:** Our November meeting on Simplified Type Certification for a "primary aircraft" was extremely productive. All of the representatives of the various aviation entities, that we invited to the Aviation Center, provided the meeting with thoughtful comments and valuable input. The representatives of FAA were especially helpful in their frank and open appraisal of our primary aircraft proposals. Both FAA and AOPA presented their own "primary aircraft" concept papers. The papers were very valuable to our discussions. Tom has asked meeting attendees to submit their comments on our base plan. We will then set up committees to address specific issues within the primary aircraft concept. These committees will report to a general session which will be hosted early next spring.

**EAA AIRCRAFT BUILDING TECHNIQUES - WOOD,** the first of a new series of technical manuals condensed from materials previously published by EAA and the EAA Aviation Foundation is now available. This 120 page publication provides a wealth of information for builders and restorers of wooden aircraft.

Available for \$8.70 ppd. from the EAA Aviation Foundation, Wittman Field, Oshkosh, WI 54903-3065.

## DESIGNEE WORKSHOP TIPS

Bob Haley, Designee 64 - From the Chapter 166 Sport Aviation Newsletter

**Dent Removal in Sheet Metal.** Small dents in aircraft sheet aluminum can be rolled out using a ball bearing in a socket similar to the ones used in packing conveyors. A sheet of rubber 3/8 thick is contact cemented to a 3/4" board 4" x 6", used as a back up on the outside of the dent. The dented side is rolled by hand with the cone or ball bearing until the dent is gone. The rubber sheet on the wood block supports the sheet metal during the rolling operation and allows for springback. Of course the metal should be free of dirt to prevent pitting and scratching.

**REFERENCE GUIDES TO EAA PUBLICATIONS** through the 1983 issues will be available by February. This publication allows the user to locate information in SPORT AVIATION, VINTAGE AIRPLANE, SPORT AEROBATICS and ULTRALIGHT.

1980, 1981, 1982 or 1983 - \$3.00 each ppd.  
1975 - 1979 - \$6.00 each ppd.  
1970 - 1974 - \$4.00 each ppd.  
1960 - 1969 - \$5.00 each ppd.  
1953 - 1959 - \$5.00 each ppd.

Order From: John Bergeeson  
615 West Way  
Mt. Pleasant, MI 48858

**FREE ENGINE BOOKLETS:** Engine Components, Inc. of San Antonio offers two free booklets that should be of interest to EAAers.

"Overhaul/Top Overhaul Break-In Procedures: is a guide for break-in of a rebuilt or overhauled engine, or the break-in of a new cylinder on an engine, whether chromium-plated or steel.

"Rebarreling, An Alternative For Reclaiming Cylinders" outlines the highly specialized process rebarreling cylinders that have been damaged or worn beyond serviceable limits.

Request your copies by writing Engine Components, Inc., P. O. Box 17099, San Antonio, TX 78286.

**ZENAIR NEWSLETTER:** Chris Heintz has announced a revised newsletter for his designs - including the Cricket and the new Zipper. The Newsletter will be published 6 times per year and will feature builder tips, construction aids, "wanted" and "for sale" section, subscriber news and bulletins from Zenair. The Newsletter keeps the builder informed on the design he is completing and keeps him/her in touch with the designer, the company and other builders and those who fly the same design. Subscriptions are \$10 (U.S.) for Canada and the U.S. and \$15 (U.S.) foreign. Write Zenair News, 615 W. May, Mt. Pleasant, MI 48858.

**MONNETT SERVICE BULLETIN:** Monnett Experimental Aircraft has temporarily restricted the flight envelope of all Sonerai II aircraft. The restrictions include amended air speed, gross weight and aerobatic maneuvers. A modification will be necessary and the flight envelope can be amended. For further information, all builders of Sonerai II aircraft should immediately contact Monnett Experimental Aircraft, 895 W. 20th Ave., P. O. Box 2984, Oshkosh, WI 54903. Phone 414/426-1212.

**NEW METAL RIBS FOR OLDER PIPERS:** Univair has announced that it is now producing FAA approved stamped aluminum ribs for all the metal spar, fabric covered Piper aircraft, including the J-3, PA-11, PA-12, PA-14, PA-15, PA-16, PA-17, PA-18, PA-20, PA-22 and some PA-25 Pawnee models. The ribs have been approved (STC) as direct replacement parts, and no major installation modification to either existing wing parts or to the ribs is needed. The ribs are also approved for use of blind rivets to attach fabric. For further information, contact: V.P. "Bob" White, Univair Aircraft Corp., Rt. 3, Box 59, Aurora, CO 80011. Phone 303/364-7661.

**AEROBATIC BONANZA FIX:** In response to FAA's recent recall of aerobatic certification of the E-33C and F-33C Bonanzas, Beech Aircraft will supply free kits to owners which will restore the aerobatic approval. Installation cost, which must be borne by owners, are estimated at \$3000 per aircraft.



# DESIGNEE VISITS

One of the important services provided by our DESIGNEEES is visiting aircraft building/restoration projects to discuss and offer suggestions about them. The DESIGNEEES in the following listing are to be commended for their efforts in helping to make sport aviation a safer activity by providing this service. Comments for publication are selected for the purpose of providing guidance or assistance to builders and the DESIGNEEES visiting them. DESIGNEEES are requested to note problems or procedures observed in their project visits in the comment's section of the Designee Visit Report.

Tom Ryan, #1238  
Alexandria, Virginia  
(703) 370-6858  
\*VariViggen

Shirl Dickoy, #1288  
Salt Lake City, Utah  
(801) 268-3380  
\*Glasair

W. A. Worack Sr. #107  
Beaumont, Texas  
(409) 834-6589  
\*Sonair III

Jack Denison #116  
Rochester, New Hampshire  
(608) 332-8774  
\*Hirondelle PGK-1

Gil Hauser #126  
Phoenix, Arizona  
(602) 846-4135  
\*KR2

Vernon C. Long  
Eldridge, Iowa  
(319) 285-4549  
\*Vari-Eze

Ernest D. Kent #269  
Marana, Arizona  
(602) 662-5638  
\*Aero Gare Sea Hawk  
\*Long EZ

Jack L. Stead #399  
Fort Erie, Ontario, Canada  
(416) 871-4180

\*Moai  
\*Aerobacs 11-AC  
\*Cessna 140

Bob Burbick #408  
Sun City, Arizona  
(602) 351-0247  
\*Thorp T-18  
\*GN-1 Aircamper

Richard Fry #477  
Hickory Hills, Illinois  
(312) 698-6216  
\*Christen Eagle

Jack Hickey #478  
Carrsbell, Florida  
(904) 807-2499  
\*Flybaby  
\*Sparrow Sport

Gideon J. Hagood #516  
Newport News, Virginia  
(804) 696-2872  
\*Dragon Fly

Frederick Wegner #528  
Des Moines, Iowa  
(515) 285-1858  
\*KR-2

Merland Malzahn, #1430  
Antigo, Wisconsin  
(715) 623-5386  
\*Rally 2B

Frank E. Eastman, #1501  
Tooele, Utah  
(801) 88 22325  
\*Jodel

Glenn E. Peck, Jr., #1508  
Nipomo, California  
(805) 929-3644  
\*Starduster Too

R.F. Woolaway #673  
Cassville, Missouri  
(417) 647-3730  
\*Emeraude CP108

George K. Elwood #582  
Albany, Oregon  
(503) 926-2668  
\*Glasair

Don Smith #585  
West Helena, Arkansas  
(501) 572-9521  
\*Sonair III

M. E. Mettlen, Jr., #667  
Victoria, Texas  
(512) 573-8080  
\*Oldfield Baby Lakes

Ken Heidger #693  
Roeville, California  
(918) 789-7294  
\*Quickie 2

Louis C. Dagne #868  
Lake Park, Florida  
(305) 622-1469  
\*Moai  
\*VariViggen

Glenn E. Moore #926  
Wilmington, North Carolina  
(419) 762-7285  
\*Monair S

Charles Burtch, #1093  
Phoenix, New York  
(315) 696-4366  
\*Osprey II  
\*Marquard Charger

C. D. Beltelshees, #1106  
Boulder, Colorado  
(303) 665-9042

\*Glasair  
\*Glasair  
\*Sonair II

Richard Kurzenborger #937  
Horseheads, New York  
(607) 739-4198  
\*Ultralite HFT-3

Corydon S. Bagley #1023  
Salt Lake City, Utah  
(801) 277-0809  
\*Glasair R.G.

Glenn Tuttle #3943  
Bountiful, Utah  
(801) 296-7206  
\*Falco F8L

Henry Olsen #1037  
Escanaba, Michigan  
(906) 768-7623  
\*Sidewinder

Zane Casey #1043  
Pasco, Washington  
(509) 547-0352  
\*GN-1 Air Camper

Dick Von Ber, #1113  
Saginaw, Michigan  
(517) 789-0873

\*Starduster II  
\*Sonair II  
\*Acroduster I  
\*Acroduster II

Dewey Ballard, #1064  
Prairie Village, Kansas  
(913) 642-5625  
\*Starduster II

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