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.

Designees and Subscribers:

The presentation of the STC's (Supplemental Type Certificates) making the use of unleaded auto fuel legal in Continental O-200 powered Cessna 150 aircraft was a highlight of OSHKOSH '82. Inquiries about the STCs are fast approaching the one-thousand mark with each day's mail bringing still more. An interesting "twist" to information being published by some doesn't make it clear that it IS an STC, not a general approval for the use of auto fuel. To operate a 150 legally on auto fuel the individual aircraft MUST HAVE BEEN ISSUED THE STC available only from the EAA Aviation Foundation.

Please photocopy the Fact Sheet and Application for distribution to interested individuals and F.B.O.'s in your area. Make copies on separate sheets so those submitting the application can retain the Fact Sheet for their information.

Your assistance in distributing these materials is sincerely appreciated.

Chuck Larsen, Editor

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Volume 13, Number 11 **November, 1982**

TAIL SPRINGS

From Ken Osborne, EAA 31931, Technical Officer for EAA Chapter 756

Many builders make a big problem of making a tail spring for their pride and joy. This shouldn't be as the material is easily available from almost any auto wrecking yard or even an auto springs shop. I would suggest finding some Hillman & Simca auto spring which happen to be 1 1/2 x 3/16 inch . . . an ideal size.

FORMING:

Here's a jolt. You can bend and form your tail springs **cold** . . . you do not have to heat them or have them heat treated later. Clamp the spring in a large solidly mounted vise. Use a block of wood between the jaws of the vise and the spring to protect the metal. Clamp a 3 or 4 foot length of 2 x 4 to the free end of the spring and apply pressure. You will find that with the leverage afforded by the length of 2 x 4 that it will be easy to bend the spring to whatever angle of bend needed. The auto-type springs can be drilled and cut with reasonable ease without being annealed. In drilling the holes in spring stock use a good sharp bit and apply enough pressure to keep it cutting. Use a drill press. Here's a generalization to mull over. Longer flexible springs are less apt to break than shorter stiff ones. Remember you can use two or more leafs for bigger loads.

PIETENPOL GROUND SCHOOL

From the Utica, New York Chapter 294 Newsletter

The Pietenpol is the only aircraft that requires ground school to get in and sit down.

Brief summary of the Pietenpol ground school:

Place right foot on the landing gear strut, while holding onto the wing struts with both hands. Move left foot over cockpit side onto left rear corner of the seat. Move head and shoulders over cockpit through brace wires. Place right knee and foot over cockpit side, and sit down. Reverse for getting out. Do not allow feet to become tangled in the fuel supply line or the engine primer line to ensure a good flight.

AUTO FUEL STC APPLICATION

AUTO FUEL FACTS

UNLEADED AUTOMOBILE GASOLINE APPROVED FOR USE IN AIRCRAFT: Federal Aviation Administrator, J. Lynn Helms, presented two Supplemental Type Certificates to EAA President, Paul H. Poberezny, on August 5, 1982 at the EAA International Fly-In Convention in Oshkosh. These Supplemental Type Certificates (STC's) constitute FAA's approval of the use of unleaded automobile fuel in Cessna 150 aircraft equipped with TCM O-200 and O-200-A engines. The STC's are a direct result of the EAA Aviation Foundation's Flight Research Program. EAA has been attempting to obtain federal approval for the use of unleaded auto fuel in aircraft for six years. In the latest research program and engineering flight tests, a Cessna 150 owned by the EAA Aviation Foundation was flown for approximately 750 hours while powered by unleaded auto gasoline.

CONDITIONS: The STC's approve the use of unleaded automobile gasoline in Cessna 150 series aircraft equipped with TCM O-200 and O-200-A engines under the following conditions: 1) The gasoline must conform to ASTM SPECIFICATION D-439. Most state laws require automobile fuel to conform to this specification. However, in all areas it is the responsibility of the pilot to insure that the unleaded auto fuel with which he services his plane does meet the specification. 2) The engine ground idle speed must be set to 700 rpm, minimum.

LIMITATIONS: The unleaded automobile fuel is fully approved for FAR Part 91 General Operations and FAR Part 141 operations (Pilot Schools), and, of course, your ordinary personal use for business and recreational flying.

Operations under FAR Part 121 (Airlines) and FAR Part 135 (Air Taxi) are **not approved.**

MIXED FUELS: Aviation and unleaded auto fuel may be mixed. When they are mixed the resulting fuel is considered to be automotive fuel and is subject to the previous limitations.

PLACARDS AND MANUAL SUPPLEMENT: In order to legally use unleaded auto fuel, placards (available from EAA) must be placed at the fuel tank inlets and an approved flight manual supplement (available from EAA) must be carried in the aircraft at all times. In addition, the aircraft must be inspected and a log book entry made by an IA mechanic.

MODIFICATIONS: Except for the required placard, and an increased minimum engine idle speed, no design changes or modifications are necessary to the airframe engine of the aircraft.

APPLICATIONS: In order to obtain a Supplementary Type Certificate, including placards and flight manual supplement, fill out the attached application form and release statement for each aircraft to which you wish to apply the STC. Mail this form and a check for $65.00 per airplane (EAA members $50.00 per airplane) to the EAA Aviation Foundation, P.O. Box 469, Hales Corners, Wisconsin 53130. The funds resulting from the sale of this STC will permit the Foundation to continue its efforts in extending the use of unleaded automobile fuel to other aircraft which may safely use it; and, in seeking additional ways to reduce the cost of flying.

Please Type or Print

NAME _____ EAA # _____

ADDRESS _____
STREET CITY STATE ZIP

AIRCRAFT N # _____

AIRCRAFT SERIAL # _____

RELEASE

I, _____, Applicant for the assignment of the above-mentioned Supplemental Type Certificate, reason of any damage, loss or injury which hereafter may be sustained by anyone as a consequence of the use of the aircraft in conformity or pursuant to the Supplemental Type Certificate to be assigned. I further acknowledge that in signing this Application, **neither EAA nor the EAA Aviation Foundation has made any express or implied warranties or representations of any kind with respect to the use of the aircraft in conformity or pursuant to the Supplemental Type Certificate,** and I hereby assume the risk of such operations.

Applicants Signature: _____

Mail this form and a check for $65.00 per airplane (EAA members $50.00 per airplane) to the EAA Aviation Foundation, P.O. Box 469, Hales Corners, Wisconsin 53130.

Please photocopy this form for use by applicants.

APPLICANTS: Please complete this form in duplicate. Submit one with your remittance and retain the second for your information and record.

LETTERS 'N SHOP TALK

ULTRALIGHT TIPS

By Jim Jaeger, EAA 105953, as published in the EAA Ultralight Assn. Chapter 1 Newsletter MICROLITE FLYER

Hello fellow wing-nuts. This month's tip on how to get more thrust from your power pack ———

Get a tuned exhaust system (expansion chamber) designed for your particular type engine. A Fisher brand would be an example.

Here's an example: With Yamaha 100-S and reduction, prop 54" by 20 pitch, using either straight pipe, or quiet snowmobile muffler thrust was exactly 75 lb.; with the tuned exhaust system thrust shot up to 100 lb. A solid 25% improvement.

Yes, with the tuned exhaust, you will turn the high jet on your carb open more; your engine will be faster, taking in more air, and burning more gas. Consequently it will develop more heat, too.

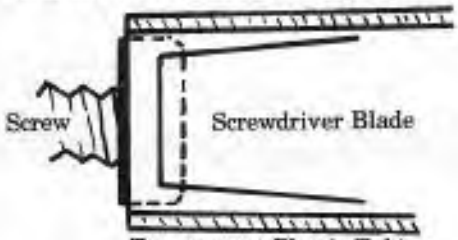
This should be good news for the fan cooled, Chrysler 820 and MAC 101 users. Caution: run the carb mixture as rich as possible (extra fuel has a cooling effect on your engine); too lean and it surely will overheat. Imagine easier lift-offs and half throttle cruise.

SCREW HOLDER

From Ricardo Chaz Correa, EAA 124246, San Martin 1915, 3400 Corrientes, Argentina

When installing truss head (not Phillips) sheet metal screws I found I scratched the sheet metal of my Teenie Two project when the screwdriver slipped. I solved the problem with the tool-derivation shown. It is inexpensive and functional.

The device is a length of transparant plastic tubing of a slightly smaller I.D. than the width of the screwdriver blade extending from the bottom of the handle to approximately 1/8" below the end of the blade. It firmly holds the screwdriver in the screw slot.



TACH CHECK

From the Abilene, Texas Chapter 471 Newsletter

The pilot tip of the month goes out to those of you who are concerned about the accuracy of your tachometers. Aircraft tach are noted for their inaccuracies which can cause pilots to operate their crafts at inefficient power settings.

A ramp check can be accomplished that will be no less accurate than the finest tester on the market. The only requirement is that the test be performed at night. Simply position the aircraft in the light of a mercury vapor or fluorescent light and you will immediately be aware of a stroboscopic effect on your propeller blades. This is due to the 60-Hz AC line cycle. The strobe effect (you will be able to see an image of the propeller blades that appear motionless) will be apparent in multiples of 60, i.e., 1200, 1800, 2400, etc. If the test is observed from outside the aircraft, a two-bladed prop will show an "X" pattern at 1800 rpm, and a six-pointed star at 2400.

Dear Chuck,

While at Watsonville Fly-In, I mentioned that I had used a cast cutter to trim plexiglass canopy and it was suggested that I write this suggestion to you. It is the best plexiglass cutter I have found. This was published in Chapter 71's bulletin when I was editor.

The cast cutter is used by your friendly orthopedic physician to remove the plaster cast used for fracture care. The blade oscillates — it does not spin. It will cut curves and do neat trimming with much less danger of cracks developing. You should be able to find a cast cutter in any Family Practice or General practice doctor's office.

Sincerely,
Tom White, EAA 148271
P.O. Box 145
Malibu, CA 90265

TORQUE LIMITS

By Dewey Ballard, Designee 1064, as printed in TOUCH & GO, Overland Park, Kansas Chapter 200's Newsletter

One of our Chapter members mentioned that he would like to have a convenient chart of torque limits for use with the more common airframe nuts and bolts used in aircraft construction. The values in the chart below are for standard cadmium plated nuts with oil-free threads and used only in metal-to-metal assemblies. In joining wood, unless bushings are used, nuts are torqued up only tight enough to prevent rotation of the bolt and without crushing the wood fibers. In the chart, column A is the torque range for tension type nuts (AN310, AN365), column B is for sheer type nuts (AN320, AN364). The values are in inch-pounds.

Tap Size	A	B
Fine-thread bolts		
8-36	12-15	7-9
10-32	12-15	12-15
1/4-28	50-70	30-40
5/16-24	100-140	60-85
3/8-24	160-190	95-110
7/16-20	450-500	270-300
1/2-20	480-690	290-410
Coarse-thread bolts		
8-32	12-15	7-9
10-24	20-25	12-15
1/4-20	40-50	25-30
5/16-18	80-90	48-55
3/8-16	160-185	95-100
7/16-14	235-255	140-155
1/2-13	400-480	240-290

A bolt of the proper length should have no more than one or two threads showing when tightened with the proper torque. Checking for cotter pin hole alignment after reaching the low end of the torque range allows for a bit more turning to secure alignment without exceeding the torque limit for the bolt and nut. Never back-off a nut to obtain hole and castellation alignment. Self-locking nuts (AN364, AN365) require no specific alignment. They can be used on drilled or undrilled-shank bolts.

When using them on drilled-shank bolts be sure that there are no burrs around the cotter pin hole. A self-locking nut can be used more than once, until it can be turned on or off by finger pressure alone. Just remember, a self-locking nut must not be used on a bolt which is subject to rotation, unless it happens to be one of the super-duper nuts which have a self-locking feature plus castellations for a cotter pin.

DESIGNEE VISITS

One of the important services provided by our DESIGNEES is visiting aircraft building/restoration projects to discuss and offer suggestions about them. The DESIGNEES 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 DESIGNEES visiting them. DESIGNEES are requested to note problems or procedures observed in their project visits in the comment's section of the Designee Visit Report.

Rich Hartzell, #16
North Canton, Ohio
(216) 499-8438
*Wag Acro Wag-A-Bond
*Kolb Flyer

Clair O. Meyer, #46
Clarion, Iowa
(515) 532-2602
*Modified RV-1

Robert M. Lee, #382
Deland, Florida
(904) 734-1032
*EAA Acro Sport

Cecil Pentecost, #385
Eustis, Florida
(904) 357-8355
*Teenie Two
*LongEZ

F. M. McRae, #410
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(209) 529-3894
*KR-1

Marvin D. Anderson, #486
Rochester, Indiana
(219) 223-5350
*Starduster II

John P. Newman, #649
Greencove Springs, Florida
(904) 284-0960
*Aeronca 7AC

J. Winter, #682
Belmont, California
(415) 592-2522
*Aeronca Champ - 7AC

Ken Heidger, #693
Roseville, California
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*VariEze
*KR-2

Don Beneteau, #788
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*Howard Baby Great Lakes

Charles Campbell, #858
Wayland, Massachusetts
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*Christen Eagle Biplane

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*Wittman Tailwind W-8

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*Thorpe T-18
*Stits FLUT-R-BUG

Zane Casey, #1043
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*Bakeng Duce

Lewis A. Jackson, #1181
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*Mitchell U-2

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Vallejo, California
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*Fly Baby
*Wag-A-Bond

George L. Molitor, Sr., #1221
Lake Havasu City, Arizona
(602) 855-9365
*Falco FGL

Tim Madewell, #1229
Sidney, Ohio
(513) 492-0565
*Wichawk Serial #152
*Wag Aero "Cuby"

Norman A. Petersen, #1292
Franklin, Wisconsin
*1947 Bellanca 14-13 (Classic)

R. V. "Bud" Upton, #1308
Collinsville, Oklahoma
(918) 391-3528
*Acro Sport II

John Holm, #1311
Crystal, Minnesota
(612) 535-6153
*Eagle II
*T-18
*Falco
*T-18

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*Replica Plans SE5A
*G. N. Aircamper

Kevin Morris, #1383
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*Glasair
*Q2

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Castalia, Ohio
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*Hatz CB-1

Ralph W. Borden, #153
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*Scorpion 133
*Curtiss A-1 Replica
*Sailplane

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*Sonerai II

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*Volksplane
*Sonerai II

EXPERIMENTAL AIRCRAFT ASSOCIATION

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