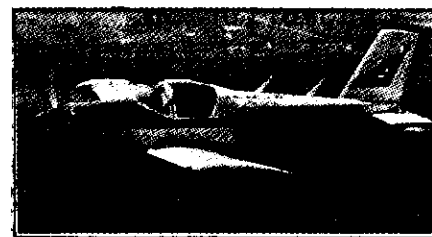




Pat Jansen

PL-1 & 2 Newsletter



NUMBER 54

SUMMER 1977

AIRCRAFT DESIGNER
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P. O. Box 80051
San Diego CA 92138

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Lee Conlan
7858 Arnette St.
Downey CA 90241

PL-2 EDITOR
Pat Jansen
7712 Telean
Houston TX 77075

PL-1 EDITOR LEE CONLAN, March 20, 1977

There are still letters coming in for information from PL-1/PL-2 builders, so it seems that there is still interest alive out there on Pazmany's.

I have come to the decision to sell my PL-1 S/N 1 fully equipped as is. Will take no equipment out to lower my asking price of \$10,500.00. Now that we have three other aircraft in family and an interest in the Varieze we have been helping to build, something has to go.

The equipment in the PL-1 is fully rated for IFR, all electric gyro flight group. Two and $\frac{1}{2}$ complete systems of avionics 360 channels solid state. Transponder, TSO, Complete engine group, air temp. & pressure, (fuel, quantity & pressure), tack, EGT, manifold pressure, amp. (30A) meter, outside air temp. etc. Etc.

Just because I'm selling my PL-1 does not mean that I'm no longer interested in the Pazmany effort. I intend to continue supplying parts. I have the two new PL-1's at my disposal any time I wish to fly them. (1) John Altizer or (2) Steve Sinclair both of them I contribute my time and effort to help them to complete. John is flying off his 50 hours now and Steve will be ready for 1st flight in early summer.

I'm enclosing 150 copies of my latest price list for our newsletter distribution.

TOM COKER, 127 Western Springs Rd. Auckland 3, New Zealand
January 20, 1977

Now about my own project PL #229 this has had to be shelved until the present time, though this year should see some progress.

I am in touch with four other PL 2 builders in The North Island. Two of which, Arthur Ireland of Kackoke and Frank Ciocchetto of Auckland #293 are making very good progress. We do have problems in this country though with supplies of materials as called out on the plans and may have to seek alternates. I should like to hear from any builder who has considered using metal fuel tanks, either in wing tip or in board. Kindest Regards.

Larry Marsh, 506 North 5th, Quincy, Ill. 62301 is a new subscriber.

BARRY LEMBKE, R.R. 3, Ayton, Ont. N OG ICO has renewed his subscription.

KEN BROWN, 5-3 Ross Ade Dr., W. Lafayette, IN 47906
Feb. 20, 1977

I am currently pursuing my Batchelors degree in Electrical Engineering here at Purdue University and do not have any time to work on my PL-2. However, I will be graduating (I hope) in about a year and plan to start on it then.

BRUCE CARMEAN, 150 S. Fairview Ave., Decatur ILL 62522
February 2, 1977

Do not have much news. Have not done much on PL-2 #75 for past eight months. However, am back at it. Fuselage is about 90% complete & vertical fin attached. Finishing up controls etc., so they will be ready for installation. Will fit spar under fuselage before finishing wing. 'Hope to be flying summer of "78"!

Did not get to Oshkosh in "76". Had a busy year and did not have time for everything. First time missed in several years.

W. H. SMITH, P. O. Box 395, Greer S. C. 29651

W. H. Started his PL-2 on January 15, 1977. Currently he is working in the garage and living room.

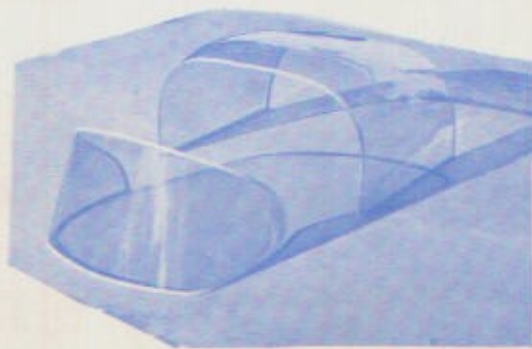
JOHN G. OSBURN PL-2 #39, 3215 South New York Avenue, Milwaukee, Wisconsin 53207

Please excuse my tardiness. We have been working so much overtime that the PROJECT is suffering, but we do make slow progress. I thought that you may be interested in passing along one man's way that helps in making sheet metal parts:

I draw accurate full scale drawings on drafting vellum, making certain that hole and rivet centers are exactly located by sharp lines made with very sharp drafting pencils. The drawings are then printed by a dry (somnia) blueprint process and reversed for opposite hand parts. Rubber cement such as used for artwork layups is used to cement the cut-out prints directly on the aluminum (Sanfords rubber cement is good and an edge allowance permits shearing along or near the outline). By careful use of a sharp scribe, center punch and magnifier, centers can be located literally within a few thousandths (easy within .005). The cemented on print serves both as a pattern and as a protective surface for the aluminum. Sometimes blank paper cemented to the other side to protect it also. The parts are cut out, edges dressed and all but match holes finished with the paper in place. Rivet centers can be indicated with a center punch used lightly. The paper protects the surface of the parts from all but the worst of offenders during the part fabrication. Dirt, small chips and all but the very bad vise jaws (smooth variety) and brake rails will be protected against, while you are doing the drilling, sawing, bending or what have you. Locate and drill most holes and centers before bending since the paper may creep while forming. Remove the paper, radius remaining edges, cleanup, alodine and you will have fewer scratches, pressure marks and much nicer parts.

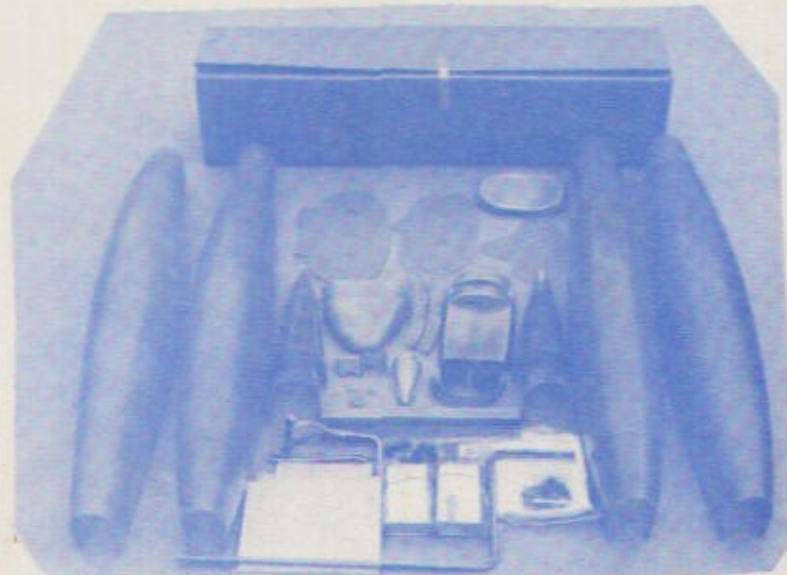
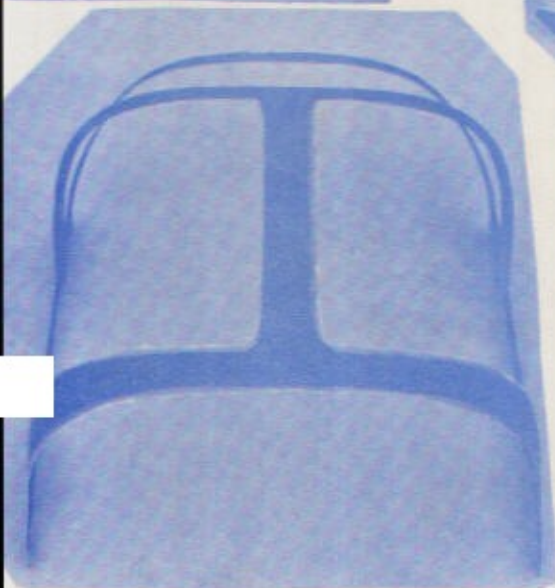
NIEL R. PETERSEN, 11227 Farm Lane, Hopkins, Minn. 55343.

I'm taking over from my brother Paul Petersen so change your records (PL-2 S/N 18). Have all parts ready for heat treat, fin is together-starting on stabilator - have a lyc 108 engine (plus a spare 108!)



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Effective Prices June 1976 F.O.B.

PL-1 -- PL-1

Bulletin FG-1

(PL-1 Fiberglass Parts)

1-20-003-R Stabilator Fairing \$ 8.00
-L " " \$ 8.00
Set--- \$11.00
1-20-002-1 Rudder Fairing \$11.00
1-20-001-1 Vert. Fin Fairing
W/Strobe MTg. \$25.00
1-20-003-1 Horz. Stab. Fairing
Pair-- \$25.00
1-40-006 Carb. Air Scoop \$30.00
1-30-007-TC Tail Cone Fairing
(Lower 1/2)W/Nav. Lite
Mtg. for two lights \$45.00
1-50-002-MB Mass Bal. Fairing
Pair \$10.00

Bulletin WC-PL-1

(PL-1 Plexiglass Parts)

Packaging charge \$5.00 extra
W1-30-004 Windshield--One piece
Tints: EZI
Gray \$65.00
Clear EA
C1-30-004(x) Canopy-Halves
Right or Left EA. \$75.00
(x) STD. Tint Pair--\$110.00
EZI, Gray and Clear
W1-30-400 Windshield & Canopy
Set Complete in Clear
or STD tints: \$150.00
Crating charge \$5.00
PL-1 Slide Rail Set (Alum.) \$65.00

PL-2 -- PL-2 -- PL-2 -- PL-2

Bulletin FG-2

(PL-2 Fiberglass Parts)

2-20-003-1 Horz. Stab. Fairing
Pair-- \$25.00
2-20-001-31 Vert. Fin Fairing \$20.00
2-20-002-23 Rudder Fairing \$ 6.00
2-10-011-91 Flap Handle Cover \$18.00
2-30-004-9F Canopy Frame \$235.00
(Including crating)
2-30-009-7 Tail Cone Upper \$45.00
Tail Cone Lower \$45.00
Tail Cone Fair.Set \$65.00
2-80-001-49 Air Vent Molding
Pair-- \$20.00
2-80-001-49 Air Vent Exhaust
Pair-- \$20.00
2-10-011-47 Console Fairing \$18.00
2-10-013-7 & -8 Wingroot "set \$100.00
Packaging 10.00

Bulletin WC-PL-2

(PL-2 Plexiglass Parts)

Packaging charge extra \$5.00
W2-30-004-7 Windshield one piece
STD. Tints EZI
" Gray \$65.00
Clear EA
C2-30-004 (x) Canopy Halves
Right or Left EA. \$75.00
(x) STD. Tint or Clear Pr.\$110.00
W2-30-400 Windshield & Canopy
Set Complete in Std.
Tints or Clear \$150.00
Crating 5.00
Pl-2 Slide Rail Set (Alum.) \$65.00

Bulletin FG-3

(PL-1/PL-2 Wing Tip Fuel Tank Kit)

KIT "B" 1. Fiberglass parts per Dwgs.
2. Mechanical parts per Dwgs.
3. Starter Kit W/ HAA Constr.
Guide. Total 302 pcs.
KIT "B" price \$365.00

Optional Accessory Kit:

1. Plexiglass Lens & Nav. Lights
2. Fuel Sensors (2)
3. Door Latches (4)
10 piece Kit price ---- \$65.00
(Packing charge for above kits) 10.00
Complete Assembled PL-1 / PL-2
Wing Tip Fuel Tank Set ----- \$795.00
Crating 25.00

PL-4A STARTER KITS

Kit #

402-3 PL-4A (Rudder) 27 parts \$75.00
402-3R PL-4A (Rudder) W/rivets \$90.00
Packaging charge ea. 5.00

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WILLIAM RAKSANYI, 7510 McCook Ave., Hammond, Ind. 46323 EAA-18090

PL-1 No. 183

February 13, 1977

To date my project is coming along great. I have completed the following. Vertical Fin - Rudder - Stabilator - All 3 landing gears (complete) Engine mount & nose wheel struts - Firewall - All fuselage frames and all machined parts. At present I'm skinning the wing leading edge. Boy what a job? So far so good. All the necessary parts have been made so now all I have to do is put them together and I have a PL-1. I do however need a set of Pazmany exhaust stacks for the Pazmany mufflers which I bought from Ken Arnold. Please let me know if someone is making them and if I can buy a set. I have all the other major parts purchased. I purchased the windshield, canopy, nose bowl and tip tank-kits. Most of these parts are better off purchased than try to do them yourself, because as a beginner you can't compare their workmanship with yours. So in closing I remain O'le PL-1 No. 183.

W. C. Gromatzky, 9304 Sorrento St., Dallas, Texas 75228

My assembly is proceeding slow but looking forward to retirement when I can really go to work.

TOMMY PHELPS, 1200 Hamsted St., Fort Worth, Texas 76115

PL-2 #49 Progress Report: 365 Parts to go. (Sigh)

A word on Sam McKee (Of Wichita Falls, Texas) Completed his PL-2 in just over three and a half years. Sam and Mona each gave me a hop, both are exceptionally good pilots and wonderful people. Sam let me fly his dream. I felt completely comfortable at the controls, Sam's PL-2 definitely has stable flight characteristics. Controls were very responsive yet positive. Flying a PL-2 is delightful.

Mamie and I hope to be at Darrell Radford's gettogether of Pazmany builders. We hope to see all of you there.

DAVE PANTON, 3565 Askin, Windsor, Ont.

December 22, 1976

Finally have plant work in shape and am back at #110 project & will soon have fuselage 100% complete & ready to fly - However need wings for same, expect to start assembly in January '77. Garage addition done & ready so have space for same.

-Last Major Hurdle - Exhaust System - Have mufflers made, need set of pipes - seems impossible to find anyone to handle thinwall bends. - Would like to know Piper or other part nos. which could be used instead, Prefer forward outlet type as on Cherokee 180 or Warrior. - Have used some Rattery Parts & found nose bowl needs rework (rear lip angles wrong) - Tail Cone Fairing is too small (top to bottom) and canopy frame lacks moulded in aluminum tubes and rear fit at ears and over baggage compartment is very poor and needs much rework - However they are a good start!! Cheers.

N. GLEN WHEELER, 119 N. Washington, Enid, Okla. 73701 Dec. 24, 1976

PL-2-86 is still in the assembly stages. I have the fuselage in the jig, the skins are fitted, am dimpling the holes, I hope to start filling up the holes as soon as the weather warms up a little. Hanger door faces north ease. I catch full effect of north wind and no sun. I have the wing in the home shop about ready to start skinning. I hope to make more of a show this year.

CHARLES AUTON, 2260 N.W. 27th Avenue, 171A, Miami, Florida 33142
I am building PL-2 #281 - I have landing gear - motor support - all other small parts made. I am ready now to start on sheet metal.

The plans are all O.K. for first time builder.

RAYMOND C. VOEGELE, EAA 050293, 870N 60E, Layton, Utah 84041
December 2, 1976

I have 100 hours on 340RV, & have a lot of fun flying it. I couldn't take it back to Oshkosh nor to Paso Robles due to over due over haul on my 0290D & I don't want to get too far from home. I too would like to see a change to a wet wing even though my tip tanks don't leak, they are just a little small.

DAVID E. LAVENDER, PL-2 #85; EAA # 47164, 4397 East Mound Street, Columbus, Ohio 43227
December 1, 1976

I have several comments to make about my own project and questions I have noticed in the newsletter. Hope it will interest others.

First of all, I am just now putting the skins on the leading edge of the wing. Unless I am looking for absolute perfection, I think that it is only fair to tell people that first of all riveting is not easy to learn, if it is done correctly. I would strongly suggest that a person work under the guidance of an expert in this field for a good week before being ready to tackle every situation. I have been a model plane builder all my life and have been a mechanic for years and know how to use the tools of the trade. I also have worked for years as an airplane designer but riveting is not easy. Certain rivets in the spar assembly need expert advise how to properly drive without damage to parts, especially at the base rib attachment. I found that the curved riveting tools did not give enough force and it was best to spring the parts back some and use a straight riveting tool. Also, to properly set the rivets at the leading edge, the very nose of the rib, takes a great deal of patience and planning.

Secondly, in regard to the landing gear. I looked back through many past issues of the newsletter and found a gentleman's name who converted the Corsair gear perfectly. He is Mr. Earl R. Heldt, 21917 Oakview Lane, Monta Vista, Calif. 95014. I wrote him and received an offer to build mine for me. He was very kind to send me his "quickie" drawings which were quite clear. Due to my wife having serious surgery, I was unable to meet his needful price for the work. Thus, I have studied up and am now ready to use the local high school's machine shop and do my own work. However, I thought I might mention that Earl has taken the Corsair gear and turned it upside down from original configuration so air and oil can be added as of Paz's design and also original attach design as of Paz is used. However, attach plates to the spar are not needing to be of 4130 steel as suggested in last newsletter by Mr. Anthony since the strength of joint is no more than the attach bolts themselves. Thus, Earl suggests 7075 T-6 aluminum. It is easier to cut, form and use and is much lighter. I wrote Earl and told him that I had carefully drawn up his design and detailed parts full scale and could supply prints if helpful.

I would not want to make profit on the work of someone else so I will supply these copies at cost of paper and copy machine. I have made

DAVID E. LAVENDER cont.

one very small improvement to the design that is not too important but it might be interesting to some who are converting these struts for use. The only design problem in this complete conversion is the fact that you cannot support the inner tube at the high end with a bearing surface. This support is not like Paz's original design. It can only be placed at the lower end of the outer cylinder. I have added a 2" long spacer that at least gives that much additional span between lower and upper supports. This will still permit dismantling of the assembly in order to replace worn parts. After long study given this conversion, I am certain it is the best one available but will require considerable rework of original parts. It all depends on how valuable a person feels his life is when landing a plane under adverse conditions such as possible forced landings, etc.

One last bit of helpful information, For those who have a bending brake with changeable bend radius edges, the -13 and -14 angles for the main spar can be bent up quite easily by placing a joggling fork at one end of angle and bend it right up. You will need a left and right joggling fork made of 1/8" hardboard. I made mine from clipboards by removing the clip from the board and then sawing the joggling forks out. By the way, this hardboard makes excellent male dies for lightening holes, etc.

All in all, I am enjoying putting my plane together but it is a very time-consuming job and the caution that has been extended by many is well worth listening to when it is said: "When getting tired, it is best to quit for the night." Too many mistakes can be easily made.

John T. Larkins, P. O. Box 254, Brandon, Miss. 39042

I should be able to resume work on PL-1 #167 in the spring of 1977.

WALTER GAMBLE, ALBANY, P.E.I., CANADA COB-LAO

Sept. 12, 1976

I have finally got equipment in shop ready to go, also have picked up a 1/2 time O-235-C complete, prop to exhaust. I have my spars & fuselage extrusions from Paz, so things are looking up, also found a shop to do my heat treating for a fair price & within fifty miles of home.

RUTH HOBBS, P. O. Box 316, Springbok, 8240, Cape, South Africa,

November 3, 1976

Our PL-2 is S-T-A-T-I-C. We feel most depressed about it but seem unable to overcome inertia. For conscience's sake we'll have to achieve something before the end of the year. With the recent increases in the price of av gas and the refueling restrictions (no gas from noon on Friday till 6 a.m. on Monday), a clean cruising aircraft like the PL-2 will be a real asset. Things look as if they'll get worse in this country too - financially I mean. The recent 18% devaluation was only the beginning. So we're glad we have all the parts for our aircraft and have only to build!! We are living in the small village of Springboh near the West Coast of South Africa, and are 350 miles from the nearest city (Cape Town).

DARRELL RADFORD, P. O. Box 2112, Paso Robles, CA 93446

April 1, 1977

As for my PL-1 (N3PL), it has been down since a couple of weeks

DARRELL RADFORD, cont.

before Christmas. I started out to re-build and re-fiberglass the tip tanks, (which I did) then while it was down I decided to go ahead and paint it, then I got a Lycoming O-320 engine to replace the O-290. The O-320 engine is being re-built and should be ready in about 2 or 3 weeks. I will let you know later on if it improves the performance any. I am especially hoping for a better rate of climb.

RAYMOND C. VORGELE, 870 N. 60E., Layton, Utah 84041

April 3, 1977

I have been flying my PL-2 34RV for approximately 125 hours, mostly airport hopping, and many touch & gos, having a ball.

If I ever get a good engine & prop, I may want to take a trip to California or maybe Oshkosh.

I have no complaints, maybe some looseness on the nose gear steering & fish tailing in rough air. I have been in grass, gravel, dirt & even salt flats & gear seems O.K. I guess if I were to build another one it would have a wet wing for sure.

LEWIS IHREN, Box 159, Golden Ill. 62339

April 4, 1977

My project is coming along nicely. I am working on the fuselage directly over the wing which is almost complete. The following articles are completed and have been signed off by the F.A.A.- the wing, flaps, ailerons, landing gear, vertical fin, rudder, and stabilizer. I have ordered an airplane engine from air engines of Florida. It is supposed to be a O-320-E2D Lyc. Wing tip tanks are under construction. The tanks are Rattray's own design. Most parts are made and only completion of assemble is required. I have been working for the last four years on my project PL-2 #254. Dewey Green has been most helpful in solving some of the questions which seem to pop up. Construction is 100% flush rivet type. Construction is being slowed because I am a working man who is trying to complete his degree program before his G.I. bill runs out.

I have spare parts needed for construction of the flaps and ailerons except skins. If someone would want them will sell to first come first serve. Some other small items. Happy flying.

DUANE SFYMOUR, 892 Catalina Dr., Newport News Va. 23602

Each of us had our own reasons for selecting the PL-1 or 2 to build and may or may not have had the oleo-pneumatic gear struts in mind when we made our decision. They are the best design but also the most complicated to make plus require occasional servicing and maintenance. My purpose here is to discuss the latter aspect. Anyone interested in why Mr. Pazmany selected oleo-pneumatic, over other types, should read his book "Light Airplane Design."

Most oleo-pneumatic struts dampen landing loads by the primary action of the mydraulic fluid contained inside the strut being forced through a small diameter hole in a piston. For the PL-2 see drawing 2-60-001. Secondary dampening and taziing shocks are taken care of by the gas charge inside the strut which I'll discuss in more detail later. The designer has to determine the size of the strut, amount of fluid required, size of the bleed hole, etc. all of which has to be

DUANE SFYMOUR cont.

correct for the weight of the aircraft and the anticipated sink rates he expects the machine to be subjected to in normal service. We, builders and operators, don't have to concern ourselves with that but to prolong the life of our pride and joy we can do several things. One, don't make high sink rate (hard) landings, taxi and turn slow, and periodic maintenance of the landing gear. You as the operator will have to decide the periods between maintenance actions as that relates to how much you fly, gross weights, field conditions (dirt, grass, paved) etc.

As I said before, primary landing shock is absorbed by the energy required to push the hydraulic fluid from one side of the 2-60-021 piston to the other. Remember the strut is extended prior to touch-down so the gas pressure is low and doesn't dampen much until the strut is fairly well compressed. Now, if you don't have any hydraulic fluid in there, or not enough, you don't get the shock absorption you should which results in a hard landing. Where can the hydraulic fluid go? It keeps the internal walls of the outside cylinder, 2-60-007, wet which is retained by the AN 6227-30 "O" ring seal. In various military manuals they allow normal fluid seepage of one drop per 25 cycles past a dynamic seal such as this one. (A dynamic seal is one that seals between moving parts.) The "O" ring seals condition is effected by the condition of the dirt scraper in front of it and the condition of the 2-60-035 tube moving past it. You can help by wiping off the shiny part of the struts on each preflight with a clean cloth dampened with hydraulic fluid, MIL-H-5606 (same stuff as inside the strut) especially if you're flying from a dusty dirt strip. Less often perhaps from sod or paved runways.

Ok, so how do I get the hydraulic fluid in there and how much? Mr. Pazmany's notes on drawing 2-60-001 states:

"With the piston assembly completely extended, fill the strut with hydraulic oil MIL-H-5606A. Install MS 28889 valve. Load the airplane to Max Gross Weight (1350 Lbs) and inflate until 3 inches of the -35 tube is visible."

I agree 100% but think I can elaborate on this operation plus simplify the oil servicing by using a homemade servicing fitting that allows the fluid to enter the strut and the gas to exit at the same time. See Sketch No. 1. I guess an oilcan could be used to squirt the fluid in but would be a messy operation. Anyhow, when it comes time for your periodic service check of the struts fluid level remove the MS 28889 gas charging valve and screw in the fitting about four turns. Slide a piece of plastic tubing over the extended tube and run it down into a container. * Attach your hydraulic hand pump to the fitting and pump fluid until you get a steady flow to stop, bounce the airplane up and down a few times to work out any trapped gas bubbles and reservice. Repeat this procedure until all the bubbles are gone. This is the way we do it on some big 40,000 Lb plus types.

Remove the service fitting, reinstall the gas charging valve and TOPQUE the inner nut to 100 to 110 inch pounds and safety wire. (of course you looked at the valve "O" ring seal to see if it was in good condition before you screwed the valve into the strut?) Now service

DUANE SEYMOUR cont.

-8-

the strut with gas per Paz's directions and TORQUE the valve swivel nut to 50 to 70 inch pounds. Replace the valve cap and tighten finger tight.

During periodic maintenance don't forget to look at the condition of the dirt scraper in front of the strut "O" rings. If clogged replace. It should ride lightly on the shiny part of the strut to wipe off dirt particles.

Why does he keep saying gas instead of air? Reason is that a gas, nitrogen, is preferred for oleo-pneumatic struts. Main reason is it helps prevent internal corrosion but also, being an inert gas, stops the rare but not unknown cases of dieseling. (You have a flammable fluid, air and compression in the strut assembly which can act like a diesel engine cylinder.) Military manuals require nitrogen or "clean dry air" if the former is not available. There are two types of nitrogen commonly available which are:

BB-N-411, Type I, Class I, Grade B.

BB-N-411, Type I, Class II, Grade B.

Class I is specified because it is oil free. Class II is defined as "Oil tolerant" and may contain up to .50% contaminants including entrained oil vapors.

So now everything is properly serviced, clean, no gas leaks, lets roar out of the parking lot and fly. Ease up a minute. When you turn onto the taxiway or runway the design dellers tell us that the landing gear side loads on any aircraft go up as a square of the speed increase when you make those turns. Or put another way, for all practical purposes the turning radius must be increased by the square of the speed increase to stay at the same side loads for a given weight. All that means the faster you bend her around corners the more stress and strain on everything.

Hope the above helps all PL-1 and 2 fanatics.

*Now will someone help me by designing a small, homemade, hand powered hydraulic fluid pump, with reservoir to service the struts and brakes with? EAA 13513 PL-2 No. 25

MATERIALS LIST - Sketch No. 1 HYDRAULIC SERVICING FITTING

Elbow, AN 833-5

Tube, 1/8 O.D. x .020, 321 St. Stl.

Type I Silver Alloy Filler Rod For Brazing

AMS 4769 Easy Flo-45 Or AMS 4770 Easy Flo.

Handy & Harmon Brazing Prod. 850 3RD Ave. N. Y., N. Y.

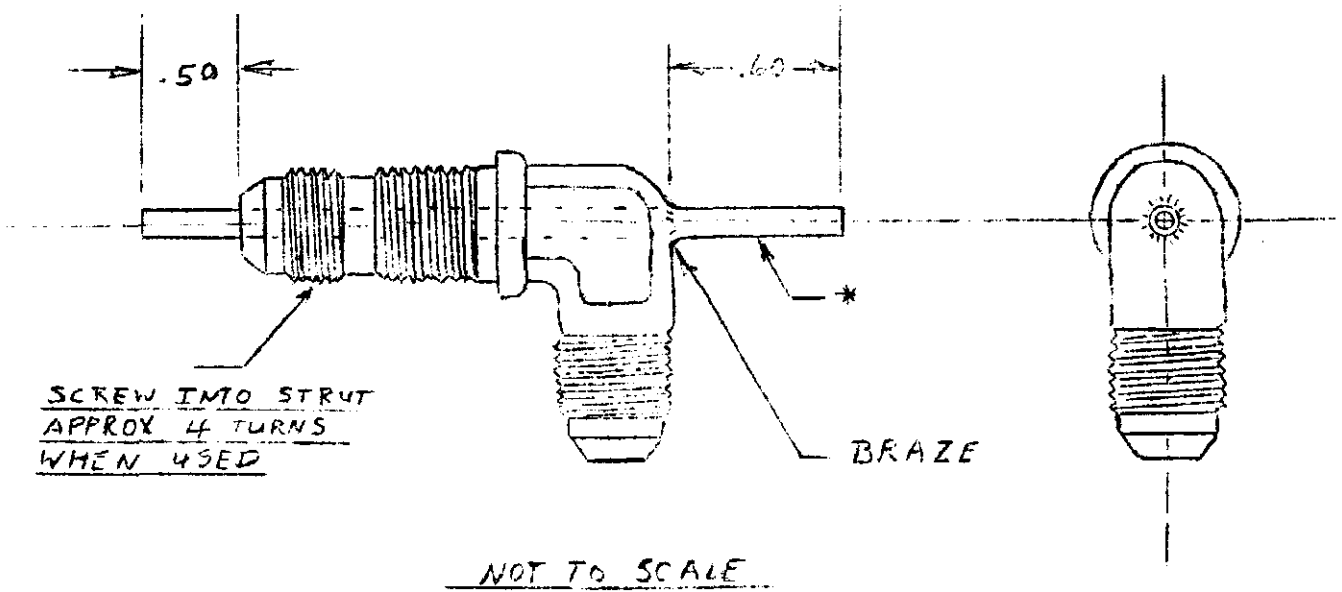
or:

Type IA, AMS 4771 Easy Flo-3

Type II, AMS 4772 Braze 541

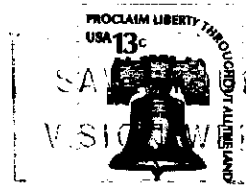
*Slide plastic tubing over S.S. tube for drawing, see servicing instructions.

PL-1 & 2 LANDING GEAR STRUT - HYDRAULIC SERVICING FITTING Sketch No. 1



A-Box

PAT JANSEN
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HOUSTON TX 77075



FIRST CLASS

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SAN DIEGO CA 92138