



THE OFFICIAL VOICE OF GP-4 BUILDERS ALL OVER THE WORLD

Volume 38

Third issue of 2001



Ernest Holmes great looking GP-4

Hello Everyone,

Here s an update on my GP-4. My last report was about the problem I had with the landing gear collapsing on landing.

I determined I would go to a hydraulic gear, I used George Periras plans for the nose gear assembly and Pat Solomon s plans for the main gear. It all worked out good. I spent all last winter working on the gear. Every piece had to be made to fit. It took time, but it all

worked out good.

April was my first flight with the new hydraulic gear. all worked out O.K. I flew about 4 hours of take offs and landings the gear was holding up good. I had a friend fly behind me in a chase plane and watched the gears go up and down. I put in three red and three green lights to make sure all gears were up or down. after flying 80 hours the gear is working great!

The next problem I had was the oil

temperature. It would go 220 to 230 degrees on a 65 to 70 degree day, to high for the engine. I installed a second oil cooler in front of the right side of the engine. I ran the right oil cooler from the engine to the left side and back to the engine. Now the oil temperatur is 190 degrees on a 90 degree day.

My next problem is the brakes. The y won t hold while doing a run up at 1700 rpm on the tack. The brakes also fade out on landing. I put in a wider disc from Wicks Aircraft kit

part no. CWB199-093 including the linings, shims and bolts. The new kit helped a little, but not much.

At a 2000 lbs. gross airplane weight, landing at about 65 to 70 mph and to stop in about 1100 feet. It will take about 195,000 ft.-lb kinetic energy. Wicks Aircraft has a wheel kit 5 Magnesium Cleveland kit no., CWB199-152 or kit CWB199-197 285,000 kinetic energy. I m going to order CWB199-197 from Wicks. I hope this will solve my brake problem.

CWB30-133 brake assembly - 192,000 kinetic energy

CWB10-34 master cylinders

CWB164-99 discs 155,000 kinetic energy

Ernest Holmes

519 East River St, Lot 71

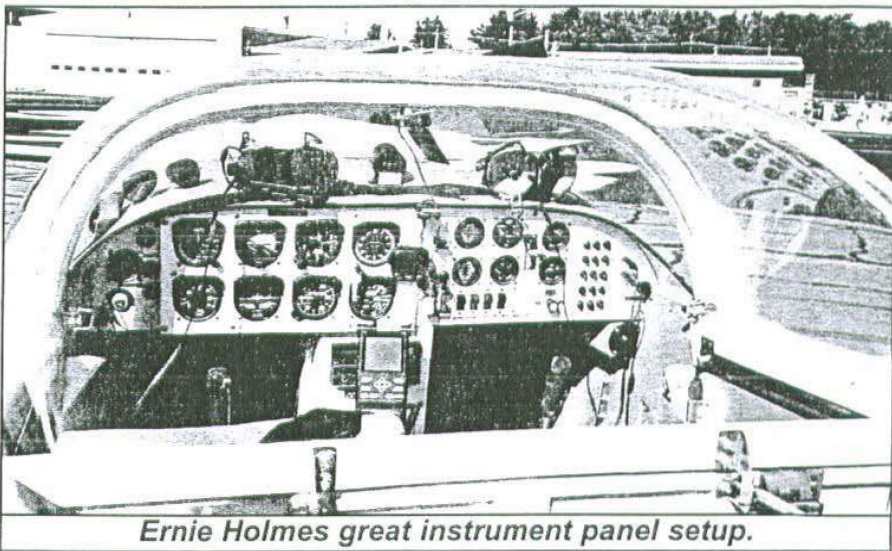
Orange, MA 01364

Great building tips from Jim Simmons

Foaming of Wing Fuel Tanks

I have just completed the foaming of the wing tanks and offer the following description of the process. I am no expert, but the steps described below worked for me. First, I ordered INSTAFOAM from Wicks Aircraft Supply. I used their #24 kit, Part Number INSTFM-3, and had just enough foam to complete the wing. For first time users, like me, this allowed enough scrap material to correct for any errors experienced during the reaming process.

Prior to beginning the process, per George s plans, I have completely installed the wing tanks, all formers and the wing leading edge spar. Filler blocks have been applied to the fuel drain ports and the fuel filler ports. A scupper drain tube has been installed at each fuel filler port. The two tanks have been successfully pressure test-

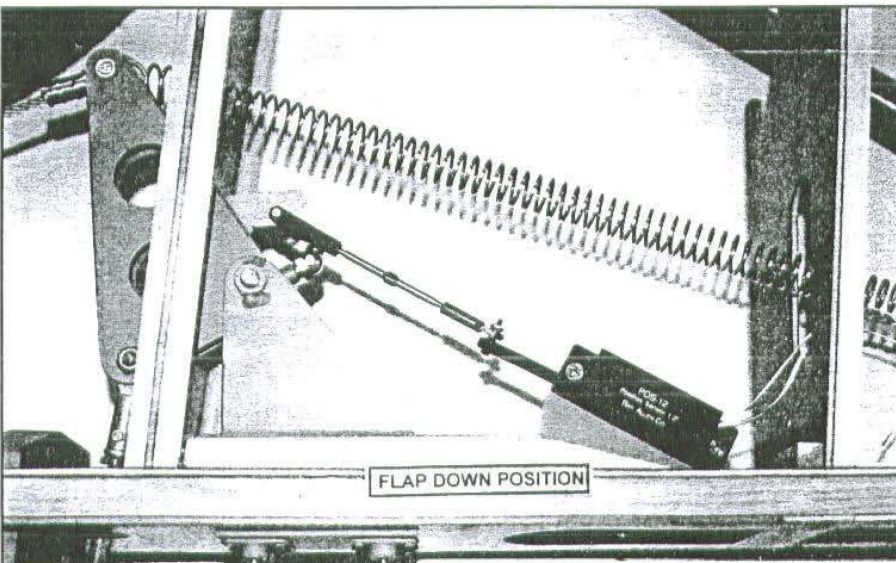
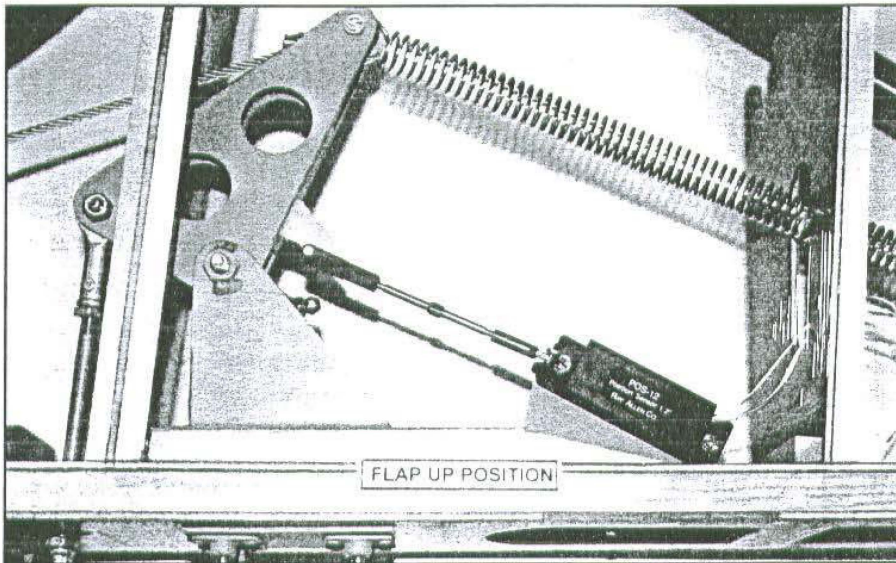
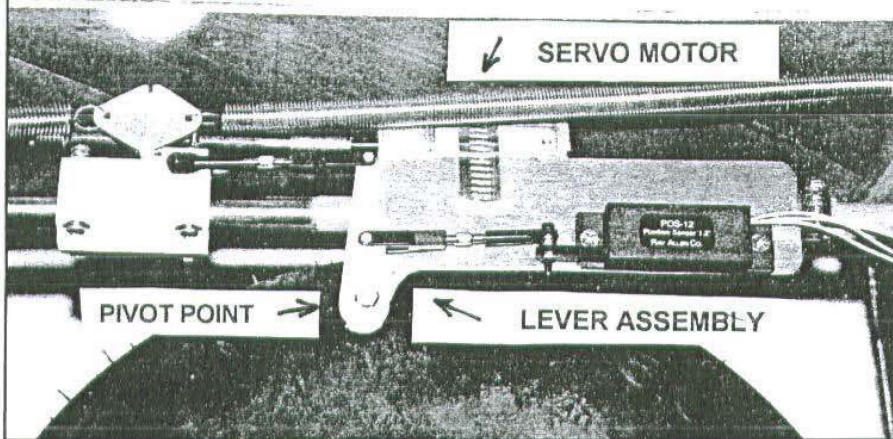


Ernie Holmes great instrument panel setup.



Tools include garden saw, surform and sanding board.

AILERON TRIM POSITION SENSOR



ed, with some minor leaks repaired. I have sanded the nose ribs and filler blocks, using a 4-foot long plank with adhesive coated #80 sandpaper, close to the correct profile. Final sanding will be accomplished after the foam is in place. I have masked off the openings of the fuel drain ports and the fuel filler ports.

I warmed my shop to about 75 degrees. I immersed a jug of resin and a jug of catalyst, in water, in my daughter's Crock-Pot. This is an important step and the water should be very hot, but not boiling. As you'll see in the picture, the Crock-Pot was just the right size for the bottles of the material. I decided to begin the process on the underside of the wing. I applied masking tape between the tank and the leading edge spar to prevent the foam from running through the gap. With the wing upside down, I began at the outermost section (smallest volume of material required). I found that 4 ounces of catalyst and 4 ounces of resin provided a good starting point and liberally filled the outermost bay with foam. I found that thoroughly mixing the material took approximately 10-15 seconds and the expanding process should have begun prior to pouring the material into the bay. Pouring the material to early would result in it rapidly running to the leading edge and not completely filling the bay. I poured along the wing spar face first and rapidly moved toward the leading edge, insuring the bay was filled. I proceeded inward, one bay at a time. As I worked my way inward, I found it necessary to very slightly increase the amount of material to comfortably fill each bay. I filled all bays prior to any trimming or sanding. Be careful when trimming with a coarse hand saw, not to cut below the wing profile. I found that a Surfoam hand tool works well during the initial shaping process. Final contouring was completed with the 4 foot sanding board.

Once I had completed the bottom of the wing, it was time to turn the wing over, remove the masking tape at the leading edge gap, and start all over again.

Aileron Trim and Flap Position Indicators

I have recently installed George Pereira's electric aileron trim system as illustrated in Volume 20, May-June 1998 issue of our GP-4 newsletter. I wanted to add an indicator to display the position of the aileron trim system on my instrument panel. I chose to use the Ray Allen Company's (formerly MAC) position sensor and for this application I am using their 1.2 travel sensor and needed to adapt it to the 2.75 maximum travel I have with my trim system. To accomplish this, I called upon my past experience with model aircraft hardware and adapted a simple lever and link assembly to provide the proper travel. The sensor and lever assemblies are mounted to a base plate, which is held in position by the hose clamp securing the servomotor to the push rod. A second, small hose clamp was added at one end of the base plate to further secure the base plate. The linkage and lever components are available in most hobby shops. It works smoothly and adds little weight to the aileron trim mechanism.

Additionally, I wanted to install an indicator to display the position of the flap system on my instrument panel. Once again, I chose to use the Ray Allen position sensor and indicator for this application. I opted for the 1.2 travel sensor and simply added a model aircraft control arm to the right flap bellcrank to drive the sensor. I then located suitable mounting position for the sensor inside the right wing that meets the necessary travel requirements. I selected this location for access through the wheel well for any adjustment or maintenance requirements.

See the accompanying photographs for details.

Submitted by Jim Simmons,
Cheshire, CT.
Plans #366

Excellent Technical reading

I just finished a good book that I think all builders, and flyers, should pickup and peruse sometime. Its the Sky Ranch Engineering Manual from Sacramento Sky Ranch. Its available for \$23.00 from their website:

www.sacs kyranch.com. In it the author, John Schwaner, introduces the reader to the Lycoming and Continental engines by describing how they run, wear, and breakdown. Sky Ranch has overhauled thousands of engines, so I guess they've learned a few things about them, I mean the book is 500 pages long. I'm an aircraft mechanic, who has paid for two expensive engine overhauls, and I still learned a few things about how the engines break, and especially about why I had to pay \$1500 to have a crankcase rebored. Buying, and reading the book, will give insight into how to treat the engines correctly, and you will certainly save hundreds of times more dollars than the twenty-three dollars you spend to get it. Also I recommend reading the series of valve-train failure articles on Bill Scott's precision engine website:

<http://precisionengine.home.mindspring.com/>

They'll make you want to crank your oil pressure up to save your valves...

Reid Siebert

Lycoming IO-360 Engine Tip

Pay close attention to the crankcase through bolt webbings. My recently purchased, and overhauled, IO-360 had sealant between the case halves and this caused the fretting of the webbings that led to the \$1500 case lapping, and re-boring. My engine builder only puts two strands of silk thread between the case halves, per Lycoming.

Bolt the case halves together, and check the camshaft, and crankshaft

bearing holes for concentricity. My engine was eating camshaft because of the out-of-round holes caused by the fretting. \$\$\$\$. Fixed now.

Bill Kleb

Hello GP-4 Builders

Just received my second Sears The Auto Shop-Quality Tools and Supplies

Seems at least 40-50% of the content could be used in aviation. Neat stuff like under \$200.00 borescopes, DIY Powder Coat kits, engine storage systems, HVLP spray systems and Dynamat Quiet Pads for you guys with noisy rides!. Tool Free number 1 800 557 3277 for catalog.

Tom in Wet Florida

A little material lingo!

Hi Guys and Gals,

I am about to order up some spruce and would like to know what **S4S** stands for on the material list. Can anyone help? Regards Humphro

Humphro,
S4S means that the wood is finished on all four sides while S2S means that the thickness is milled to final dimensions but the width is rough.

Ted Fontelieu <http://sirius-aviation.com/>

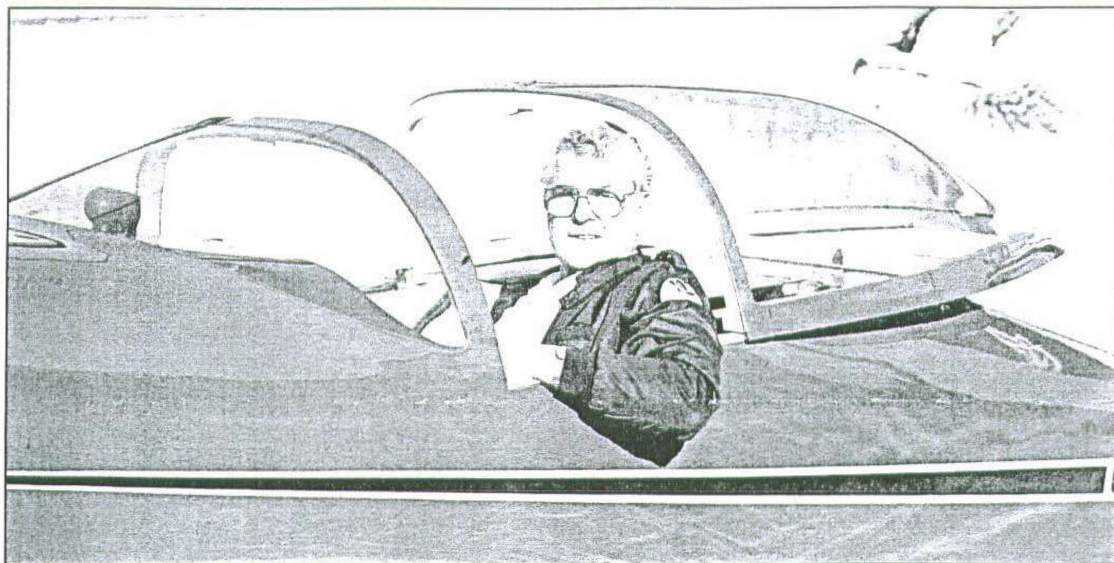
Saving Money!

I used an upright oil-dine pump. You can get them at any boat marina. Get a used one new are very expensive. The pump works on the keel which holds the boat level in the water. I bought mine for \$300.00 dollars it works well. They say that that pump hardly ever goes bad. The boat marina in Peoria have several of them from wreck boats. Hope that this helps. I also mounted my pump in the fuselage right behind the luggage area. Makes its very easy to get to and the power supply right behind it for the strobes. Catch you later.

Lynn Sheets

Bloomington, Illinois

GEORGE S CORNER



Fellow GP-4 builders;

I got a call from John Reinhart a few weeks back about his seat belt, shoulder harness installation. John had decided upon a two strap over the shoulder type, to a metal to metal buckle to each seat belt.

It dawned on me that the plans did not cover a shoulder harness installation. So I roughed out a sketch for John and he was off and running. John's original installation had two problems. With the mechanical gear retraction you need to lean forward and back to move the Johnson bar from forward, then back and down into the receptacle between the seats. A fixed shoulder harness really inhibits the action, as I found when I first flew the prototype. I had to loosen the shoulder harness way too much for safety in order to retract the gear. Two straps are very cumbersome to hook up with two big guys moving around, trying to untangle two straps over your shoulders!

I decided to use inertia reels and a single shoulder strap to the metal to

metal seat belt buckle. I got two Honda inertia reels at the wrecking yard. I am sure there are other brands that will also work. My metal to metal aircraft belts were back as were the 1 7/8 wide Honda straps. I pulled out about 3 feet of Honda strap and had a shoe shop sew my aircraft strap that connected to the seat belt onto the Honda strap, with a side to side cross stitch and an X stitch between the two cross stitches. This connection would then reel back into the inertia reel case and remain hidden. I was able to drill four 3/16 mount holes into the reel frame assembly and mount them on the underside of the canopy base at station 78. I glued a 1/8 birch ply doubler, about 8 long, on the underside of the canopy base to reinforce the mounting of the Honda reels. Most of the reel is hidden as the reel body is only about 3.5 long as it is bolted under the base.

You want to adjust your seat belts so that the shoulder strap buckle attaches to the seat belt buckle coming over your left shoulder and about on your right hip on the pilot's side. The opposite would be true for

the passenger side.

Although the shoulder harness buckle is able to disconnect at the seat belt buckle, I generally leave it connected as it is easy to throw it over your shoulder, still attached, when you unbuckle the seat belt as you exit.

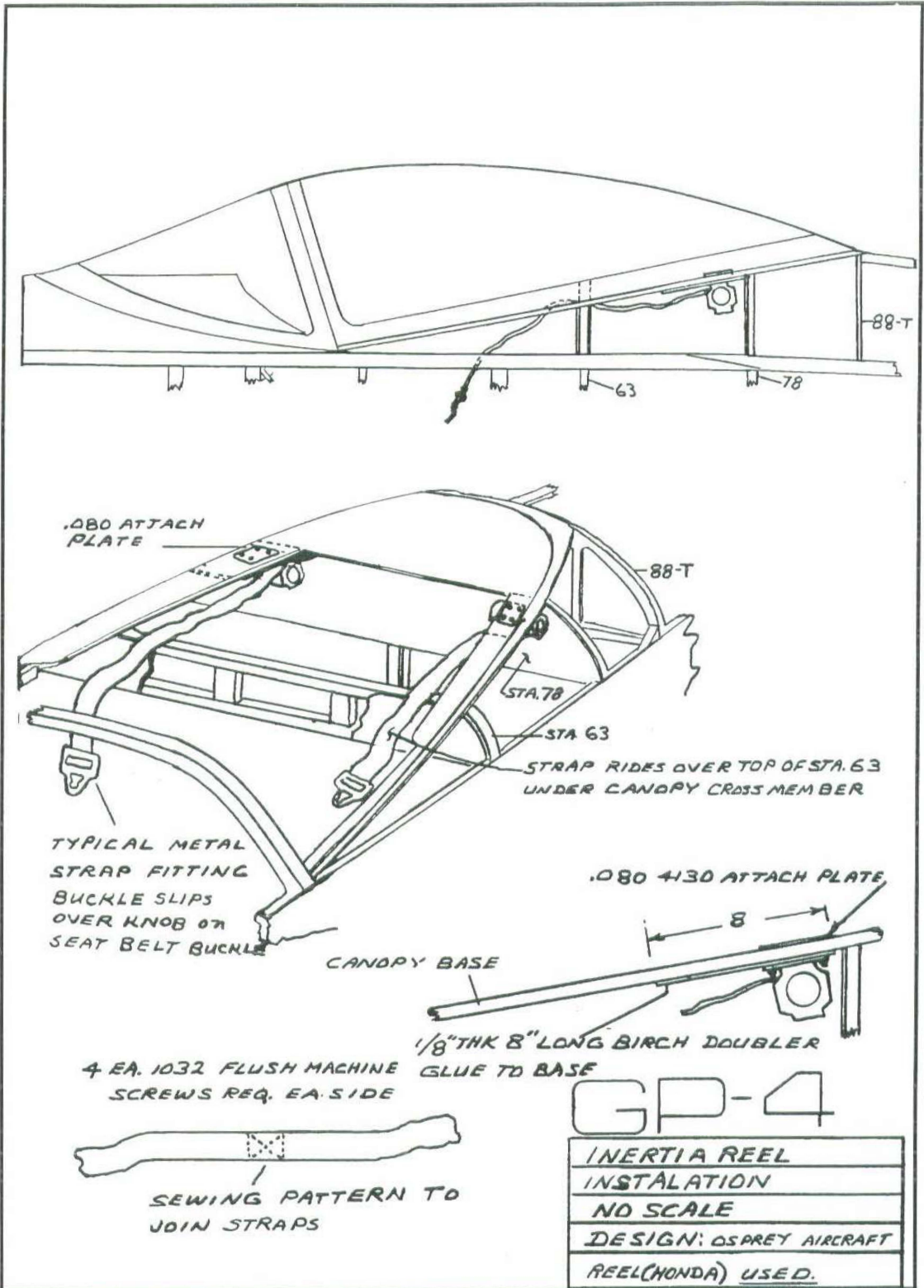
My Dukes auxiliary fuel pump finally sprang a leak. The repair kit would cost \$450 plus labor so I installed the Holley auto pump described in GP-4 newsletter Vol. 14. It works just fine.

Regards to all,

George

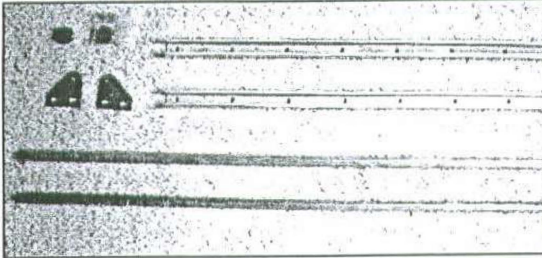
Drawing on page 6





The Classifieds

For Sale: Stainless Steel canopy hardware kit. The components include: Stainless steel canopy side rails, stainless steel canopy slide rods, 4130 steel brackets for side rail bearing mounts, and the bearings. Call for pricing. Mike Traud, 11907 Prospect Hill Drive, Gold River, CA 95670 (916)635-1147



For Sale: New Hydraulic Gear Plans Upgrade. Convert your GP-4 manual landing gear system to hydraulic - electric system. Complete with emergency back up system. (Note: System must be installed prior to wing skinning!, no retro-fits) Complete print package for \$150.00 Mail your checks to: George Pereira 3741 El Ricon Way, Sacramento, California 95864 phone (916) 483-3004 Fax (916)978-9813 E-mail GP-4@juno.com

For Sale: Pre-fabricated composite components for GP-4. Cowling , exhaust blisters, inlet ramps, tailcone . Complete four-piece package. Call or E-mail for current pricing. Shipment will be sent Freight Collect - Jake Jackson - Rio Linda, CA (916) 992-0608 E-mail J7200@aol.com

Back Issues: We have all of the GP-4 back issues (#1 thru #23) available for \$3.00 each. Mail your checks to Bill Spornitz - 1112 East Layton Drive - Olathe, KS 66061-2936

Wanted: Looking for a GP-4 project that is well under way through close to being finished . Will consider all projects. Contact me at (503) 646-5276 or by mail at Edward Mitchell, 13835 S.W. Devonshire, Beaverton, OR 97005

Wanted: An original video (not a copy!) that George Pereira made on the GP-4. I have a multi-copied video now, but is very poor. Will gladly pay a reasonable price. Contact: Spud Spornitz (913) 764-5118 or 1112 East Layton Drive, Olathe, Kansas 66061

Subscribers Information Center

GP-4 Builders & Flyers Newsletter (GP4BFN) is currently published Bimonthly at a rate of \$3.33 per issue/\$20.00 a year in U.S. \$3.50 per issue/\$21.00 a yr. in Canada, Alaska & Mexico. \$5.00 per issue/\$30.00 a yr. (U.S. funds) per 6 issues to foreign subscribers. Send remittance to: GP4BFN, 1112 Layton Drive, Olathe, Kansas 66061. **PLEASE MAKE CHECKS PAYABLE TO: BILL SPORNITZ**

Ideas and opinions expressed in GP4BFN are solely those of the individual submitter. This information is for educational purposes only! Application of these ideas and/or suggestions contained in GP4BFN are the sole responsibility of the experimental aircraft builder at their own risk, which could result in builder/pilot personal injury or death. GP4BFN, George Pereira, Osprey Aircraft do not imply or suggest in any way their usage.

Letters, Pictures and computer supplied data submitted to GP4BFN are subject to final screening by GP4BFN / Bill "Spud" Spornitz and may be restricted, deleted or revised. Material returned by request only.

Back issues of "GP-4 Builders & Flyers Newsletter", back issues are available for \$3.00 each.

The use of Lycoming, Hartzell and/or Osprey Aircraft by GP4BFN is for the sole purpose of application and description only and is not intended to infer or imply a direct connection between GP4BFN, Lycoming, Hartzell or Osprey Aircraft.

New → 913-764-5118

E-MAIL bspornitz@aol.com

George Pereira

Phone (916) 483-3004

Fax (916) 978-9813

E-mail GP-4@juno.com

Words of wisdom from a flight instructor.....

"A superior pilot is one who uses his superior judgment to stay out of situations that might require the use of his superior skills"

Steve Wilson - Flight instructor

Russellville Airport - Russellville, Kentucky

Gentlemen! I need submissions for the newsletter! Share your successes and failures with your fellow builders!



1112 EAST LAYTON DRIVE
OLATHE, KANSAS 66061

First Class Mail

NEWS FOR CRAFTSMEN OF FAST WOODEN AIRCRAFT!