WWW.OSPREYAIRCRAFT.COM WWW.SPRINGFIELDAVIATION.COM

GP-4 BUILDERS & FLYERS NEWSLETTER

August 2009
GP4BFN55

News for builders of fast wooden aircraft!

Another GP-4 Completed—Les Conwell, Fl

GEORGE'S CORNER

BY GEORGE PEREIRA

Fellow GP-4 builders:

I have been selling plans to my designs for over 40 years. Of the thousand info packs and plans sales, I don't believe I have had more than 10 or 15 bad checks or any international fraud of any kind during this period. I have always felt that airplane people are a cut above the general population. I still believe this, however with the expanding business related to experimental aircraft, there are people out there trying to make a fast buck as outlined by Elton in his news letter. For what it is worth, I would like to state my position with Osprey Aircraft.

Osprey Aircraft presently vender plans for 3 aircraft. It does not sell kits or component parts.

1.- Osprey 1: A single place flying boat

2 - Osprey 2: A 2 place amphibian

3 - GP-4: A high performance 2 place land aircraft.

Osprey Aircraft does not endorse any kit venders such as, Sirius or Light Speed. It does endorse the following: Aircraft Spruce & Specialty and Wicks Aircraft Supply. These parts companies sell material kits for my 3 designs. This is raw stock for the plan holder to fabricate parts for the.3 aircraft. In addition to the following venders are approved by Osprey Aircraft.

Bob Ringer: GP-4 prefabricated GP-4 cowlings.

Raymond Beazley: Prefabricated GP-4 metal components.

Airplane Plastics Co: GP-4 and Osprey 2 canopies.

Hartzell Propeller through Osprey Aircraft: GP-4 propeller

I strongly suggest that you give me a call if you have any doubts about any venders advertising Osprey Aircraft products other than those mentioned. 916-483-3004

Regards to all,

George Pereira

3741 El Ricon Way

Sacramento, CA 95864

phone 916-483-3004

fax 916-978-9813

BUILDER'S RESOURCE

BY BOB FOSTER

Many GP-4 builders who have completed their fuselage have installed Jim Weir's antenna kit. Jim has many more "can't live without" electronic designs that will save you beaucoup bucks or as he says, "A champagne panel on a beer budget." He has published a full panels' worth of designs in Kitplanes for several years, from about 1996 to present. I have listed all the publications and subject that I have, perhaps someone else could fill in the blanks

Kitplanes Magazine

Jan 97, pg 87, Coaxial cable

Mar 97, pg 69, Extending landing light life

May 97, pg 72, ELT antenna

July 97, pg 79, Wire rack

Oct 97, pg 62, Radio Connectors

Feb 98, g 86, Radio "stuff"

Apr 98, pg 20, Altitude chamber

June 98, pg 86, Auto Am FM Radio

Oct 98, pg 60, Inexpensive intercom

(I missed most of 1999 & 2000)

Dec 99, pg 115, VHF nav antenna

Oct 00, pg 49, LED position lights

Nov 00, pg 65, GPS

Jan 01, pg 88, Dim Bulbs

Feb 01, pg 61, Antennas

Apr 01, pg 61, lamp dimmer

Aug 01, pg 68, Aviation software

Feb 02, pg 43, Engine monitor

Apr 02, pg 79, Battery sulfate buster

HANDY TOOL REFERENCE GUIDE FOR THE DO IT YOURSELFER

Submitted by Bob Ringer—this guide should be at everyone's side!

DRILL PRESS: A tall upright machine useful for suddenly snatching flat metal bar stock out of your hands so that it smacks you in the chest and flings your beer across the room, denting the freshly-painted part which you had carefully set in the corner, where nothing could get to it.

WIRE WHEEL: Cleans paint off bolts and then throws them somewhere under the workbench with the speed of light. Also removes fingerprints and hard-earned calluses from fingers in about the time it takes you to say, "What the....??"

ELECTRIC HAND DRILL: Normally used for spinning pop rivets in their holes until you die of old age.

SKILL SAW: A portable cutting tool used to make studs too short.

PLIERS: Used to round off bolt heads. Sometimes used in the creation of blood-blisters.

BELT SANDER: An electric sanding tool commonly used to convert minor touch-up jobs into major refinishing jobs.

HACKSAW: One of a family of cutting tools built on the Ouija board principle. It transforms human energy into a crooked, unpredictable motion, and the more you attempt to influence its course, the more dismal your future becomes.

VISE-GRIPS: Generally used after pliers, to completely round off bolt heads. If nothing else is available, they can also be used to transfer intense welding heat to the palm of your hand.

WELDING GLOVES: Heavy duty leather gloves used to prolong the conduction of intense welding heat to the palm of your hand.

OXY-ACETYLENE TORCH: Used almost entirely for lighting various flammable objects in your shop on fire. Also handy for igniting the grease inside the wheel hub you want the bearing race out of.

TABLE SAW: A large stationary power tool commonly used to launch wood projectiles for testing wall integrity.

HYDRAULIC FLOOR JACK: Used for lowering an automobile to the ground after you have installed your new brake shoes, trapping the jack handle firmly under the bumper.

EIGHT-FOOT YELLOW PINE 2X4: Used for levering an automobile upward off of a trapped hydraulic jack handle.

E-Z OUT BOLT AND STUD EXTRACTOR: A tool ten times harder than any known drill bit that snaps neatly off in bolt holes thereby ending any possible future use.

BAND SAW: A large stationary power saw primarily used by most shops to cut good aluminum sheet into smaller pieces that more easily fit into the trash can after you cut on the inside edge of the line instead of the outside edge.

TWO-TON ENGINE HOIST: A tool for testing the maximum tensile strength of everything you forgot to disconnect.

CRAFTSMAN 1/2 x 24-INCH SCREWDRIVER: A very large pry bar that inexplicably has an accurately machined screwdriver tip on the end opposite the handle.

PHILLIPS SCREWDRIVER: Normally used to stab the vacuum seals under lids and for opening old-style paper-and-tin oil cans and splashing oil on your shirt; but can also be used, as the name implies, to strip out Phillips screw heads.

STRAIGHT SCREWDRIVER: A tool for opening paint cans. Sometimes used to convert common slotted screws into non-removable screws.

PRY BAR: A tool used to crumple the metal surrounding that clip or bracket you needed to remove in order to replace a 50 cent part.

HOSE CUTTER: A tool used to make hoses too short. Works equally as well on boxes and thumbs.

HAMMER: Originally employed as a weapon of war, the hammer nowadays is used as a kind of divining rod to locate the most expensive parts adjacent the object we are trying to hit.

MECHANIC'S KNIFE: Used to open and slice through the contents of cardboard cartons delivered to your front door; works particularly well on contents such as seats, vinyl records, liquids in plastic bottles, collector magazines, refund checks, and rubber or plastic parts. Especially useful for slicing work clothes, but only while wearing them.

"DAMMIT" TOOL: Any handy tool that you grab and throw across the garage while yelling "DAMMIT" at the top of your lungs. It is also, most often, the next tool that you will need.

CLEVIS JIG

By Adrian McClelland

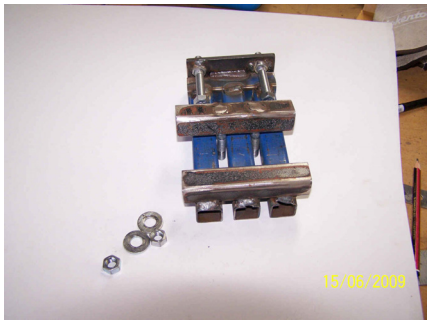
Australia

I don't know how you guys are making your clevises, but here's a simple and inexpensive jig I've made to make mine.

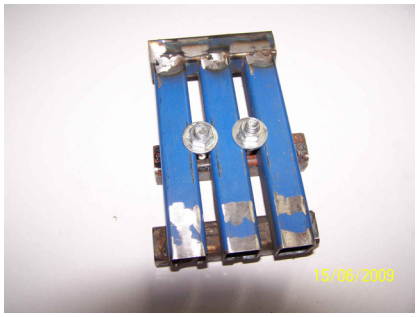
I made a base of three pieces of 1" square tube, about 7" long. Lay out the three pieces parallel, with a gap of just over 3/8"between. This to allow 3/8th bolts to slide freely in between.

Weld a piece of 1" tube across one end, and at the other end, weld another piece of 1" tube across the top. This will act as one of the jaws for the jig.

Cut another piece of 1" tube the same length as the width of the base. Drill two holes to take 3/8th bolts, long enough to extend through the gaps in the base. Weld the tops of the bolts, and grind flat. This will be the adjustable jaw of the jig. I used fairly thick walled tube, about 1/8th", for the jaws.



I also welded a piece of flat to the end opposite the fixed jaws, drilled and welded a couple of 3/8th nuts to take a couple of bolts...I found that the adjustable moved out when the jig was being used to bend a clevis, that is that the nuts on the bottom of the adjustable jaw would not hold properly and allowed the moveable jaw to slip under pressure.. I hope you can see this in the pictures.



It looks a little rough, but it works a treat.

HOW TO USE.

Every different size clevis needs an internal dye of the same width as the clevis. I cut mine from a piece of 3/8th mild steel plate.

Round off the bottom edges of the dye slightly so the radius of the clevis is smooth.

Place this between the jaws, with a piece of the same thickness of 4130 that the clevis is to be made from either side, move the adjustable jaw hard up against it and tighten the bottom bolts.

Then wind the horizontal bolts out against the jaw to stop possible slipping. (use packing between the heads of the bolts and the jaws if necessary...scrap wood, square tube etc.).

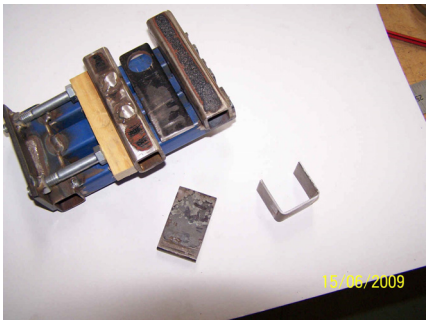
Place the jig under your hydraulic press, with the material for the clevis across the jaws, making sure it's square, and place the dye on top. (I also put a piece of flat mild steel at the base of the jaws for the moving dye and clevis material to press against).

I also welded a small length of tube to a piece of flat to fit over the end of the press...I found that the dye tends to slip and not press squarely into the jig without this.

All you have to do now is press the dye into the jig to form the clevis.

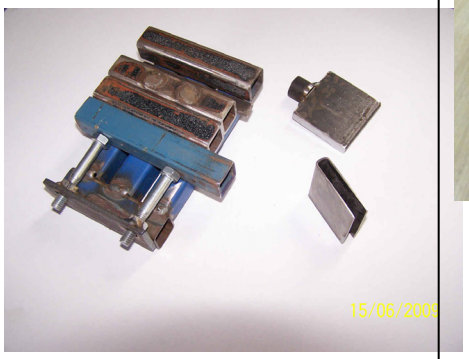
Release the press, remove the jig from the press and take out the dye and presto, one clevis.

All you need to do then is shape the clevis and drill.



This jig will do all the clevises, pulley brackets, etc. for the project.

Narrow clevises, as in the control rod idler arms can be done with the following dye, with a small section of tube welded to the top to keep it true with the press.



Uwe Seimetz of Germany, 'Fuselage"

Anyway, that's it.

It works for me, and I hope it is of some use to some of you guys.

Cheers and happy building.

HYDRAULIC GEAR PLANS NOW AVAILABLE

The prototype GP-4 uses a manual landing gear retraction system. After numerous repeated requests from builders, George developed an electric hydraulic gear for the GP-4.

The advantages of the hydraulic system are obvious, flip a switch and fly the airplane. The disadvantages include extra weight, possible electric/hydraulic failure, a back-up system, and maybe some more expense.

No machine work is required for any of the components. Plans are available for $150 from Osprey Aircraft. You can find the address and an order form on the website and on the last page of this newsletter.

TONY VAN DEN HEUVEL'S GP-4 MAKES RECORD BREAKING FLIGHT

On the next few pages are Tony's flight time summary sheet of the flight from Cape Town (South Africa) to London (United Kingdom) and return, and Climb and Performance figures, extracted from the GPS logger (at gross weight). The engine was flown at 2380 rpm in the cruise; and fuel burn was 31 liters per hour, with mixture at peak. Speeds were lowered to conserve fuel due to long leg distances. The GP4 performed very well and **not a single air-frame or engine problem was had**. Oil burn was 4qts for the entire trip. Total fuel on board was 203L in wings and nose, 175L in ferry tank.

The only issues were a storm scope that packed up, poor reception on radios for unknown reasons. We plan to investigate these. The aircraft was subjected to all weather on route including storms, ice (no heater fitted), prolonged turbulence over the Sarah desert and ITCZ. Flight was at between 10,000ft and 13,000 ft. Take off weight was 992.8kg. aircraft empty weight 607kg for the trip (with extra avionics, oxygen, documents, Medical, 5L water, life vest, flight suit, food rations and ferry tank, etc) Auto-pilot only on heading hold, pitch servo could not control.

Some additional detail on the trip can be seen on www.henshaw-challenge.com and if you Google ZU-DC there is a good thread and links with pics of the trip on AVCOM and PRUNE, YouTube etc. I will be writing an article on the actual performance of my GP4 for the newsletter. – First point of call is to improve the seat padding – man did Chalkie get a sore bum. The GP4 performed very well - truly a great aircraft and I hope this trip will have boosted the interest and "production" of the GP4. Thanks to George and all who supported in this exciting adventure.

Picture – Chalkie arrives in Cape Town greeted by Maureen

Tony will be writing about the performance of his GP-4 for a future newsletter.

START POINT		FINISH POINT		Date	Start Time	Date	Finish Time	Elapsed Time	Distance Km	Speed Km/Hr	Speed Miles/Hr	Speed Kts
CapeTown:	FACT:	Brazzaville:	FCBB1:	5/8/2009	00 01:03:27.000	5/8/2009	00 10:54:51.445	00 09:51:24.445	3306.97	335.50	208.471	181.1563
								00 02:02:10.832				
Brazzaville:	FCBB2:	Kano:	DNKN1:	5/8/2009	00 12:57:02.277	5/8/2009	00 18:48:31.596	00 05:51:29.319	1950.82	333.01	206.923	179.8111
								00 02:33:49.590				
Kano:	DNKN2:	Algiers:	DAAG1:	5/8/2009	00 21:22:21.186	5/9/2009	01 06:03:29.375	00 08:41:08.189	2782.16	320.32	199.0368	172.9582
								00 02:21:14.676				
Algiers:	DAAG2:	London:	EGMC:	5/9/2009	00 08:24:44.051	5/9/2009	00 13:39:11.870	00 05:14:27.819	1665.57	317.79	197.4676	171.5946
								00 14:26:23.001				
London:	EGMC:	Algiers:	DAAG1:	5/10/2009	00 04:05:34.871	5/10/2009	00 09:37:01.307	00 05:31:26.436	1663.70	301.18	187.1427	162.6225
								00 01:58:28.937				
Algiers:	DAAG1:	Kano:	DNKN1:	5/10/2009	00 11:35:30.244	5/10/2009	00 20:24:42.336	00 08:49:12.092	2781.74	315.39	195.9738	170.2966
								00 02:19:42.488				
KANO:	DNKN2:	Brazzaville:	FCBB1:	5/10/2009	00 22:44:24.824	5/11/2009	01 04:44:34.643	00 06:00:09.819	1950.95	325.01	201.952	175.4915
								00 01:59:35.744				
Brazzaville:	FCBB2:	CapeTown:	FACT:	5/11/2009	00 06:44:10.387	5/11/2009	00 16:20:29.743	00 09:36:19.356	3310.47	344.65	214.1543	186.095
					Total Time			03 15:17:02.743	19412.39	222.4047	138.1959	120.0889
					Total Flight Time			02 11:35:37.475	19412.39	325.7455	202.4089	175.8885
					Total Time On Ground			01 03:41:25.268				
											12062.3	10481.85
											6031.151	5240.927

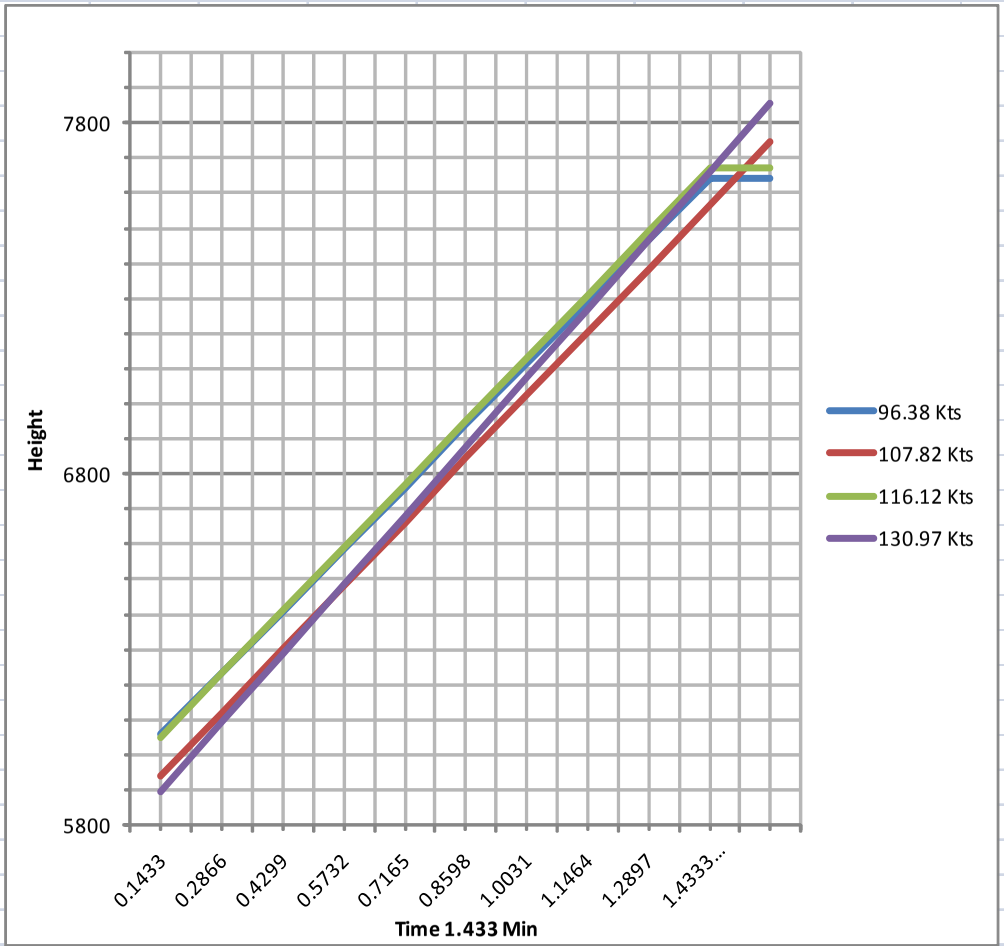
Stobbart's Challenge: 3 days 15 Hrs 17 min and 2.743 sec.

Climb Test results from 6 December

			Height at start	Height at Finish	Start	Time min	Height Gain	Distance m	Nm	Speed Kts	Ave Rate of Climb Ft/Min	Distance to Climb Nm/Min	Ft/Nm
			5897	7858	0	1.433333333	1961	5929	3.201404	130.97	1368.14	2.233538	612.5438
			6051	7671	0	1.233333333	1620	4540	2.451404	116.12	1313.514	1.987625	660.8458
			5940	7747	0	1.4000000	1807	4715	2.545896	107.82	1290.714	1.818497	709.7697
			6058	7642	0	1.233333333	1584	3768	2.034557	96.38	1284.324	1.649641	778.5478

1 kilometer/hour : knot	0.539957
1 meter/second : knot	1.943844

	96.38 Kts	107.82 Kts	116.12 Kts	130.97 Kts	Time
	6058	5940	6051	5897	0
	6234	6120.7	6231	6093.1	0.1433
	6410	6301.4	6411	6289.2	0.2866
	6586	6482.1	6591	6485.3	0.4299
	6762	6662.8	6771	6681.4	0.5732
	6938	6843.5	6951	6877.5	0.7165
	7114	7024.2	7131	7073.6	0.8598
	7290	7204.9	7311	7269.7	1.0031
	7466	7385.6	7491	7465.8	1.1464
	7642	7566.3	7671	7661.9	1.2897
	7642	7747	7671	7858	1.433333



	Square pattern 2500 rpm, full throttle, 7000 ft.					
	Time in Sec	Distance m	Speed m/s	Km/Hr	Kts	Kts2
	51.058	5540	108.5040542	390.6146	210.915	210.915
	66.647	6896	103.4705238	372.4939	201.1306	201.1306
	56.028	5580	99.59306061	358.535	193.5934	193.5934
	63.596	6563	103.1983144	371.5139	200.6015	200.6015
Totals	3 57/60	24579	103.5650932	372.8343	201.3144	201.3144
			Average	373.2894	201.5601	201.5601
		1 kilometer/hour : knot			0.539 956 803 46	
		1 meter/second : knot			1.943 844 492 5	

FUEL CAPS
BY RAY CALL

While thinking about the fuel filler for the main fuel tanks as per the plans, DWG 23 , I decided to see what was commercially available through Wicks Aircraft Supply and Aircraft Spruce and Specialty. They both offered threaded aluminum caps and matching filler necks. Some of these items seemed to be usable, but why not make my own? That way I could custom size them.

After considering that the GP4's fuel tanks are not flush with the outer skin, it occurred to me that if the filler necks were a little longer than the space between the tank surface and the skin surface I could attach the fillers to the tanks before they were closed up and installed in the plane, then after skinning the adjacent areas I could modify the length of the fillers to give a flush finished surface. After considering a number of different designs I settled upon the following.

The measure of the wing ribs that surround the fuel tanks, plus the skin thickness, plus a margin, left me with ¾ inch from the tank surface to the top of the filler neck. Talking to an engineer friend led me to include a 5/8 inch thread length for the cap. The overall length of the filler, and also the cap, is 1 inch. The thread size is 20 TPI (Threads per Inch), the same as specified in the parts catalog for similar fuel caps. The filler caps supplied with the various RV airplane kits led me to choose a bore of 2 inches to accept fuel nozzles. I chose to make the wall thickness ¼ inch. I also wanted a minimum of a ¼ inch flange to glue and screw the filler neck assembly to the tank. Those decisions dictated a piece of aluminum bar stock of 3 inch minimum diameter. I bought a 12 inch length of 6061 aluminum bar stock from McMaster-Carr (www. mcmaster.com)

To make the caps flush with the surface they would have to fit inside the filler necks. The ¼ inch walls of the filler necks would be bored out such that they were 1/8 inch thick for the upper 3/8 + inch. That makes the caps 2 ¼ in diameter for 3/8 inch then a shoulder to a smaller diameter of 2.035 – remembering that the outer diameter of the threads would have to be larger than the 2.00 inch bore of the filler necks. The 3/8 inch long portion would also contain an O ring groove which would (hopefully) keep out unwanted moisture and help prevent the cap from vibrating loose. A thin gasket could rest on the shoulder of the cap to aid in moisture blocking. (The thickness of the gasket is about the same as the '+' listed when describing the 3/8 inch depth of the 2 ¼ inch bore.) The cap could have been made from the same stock as the filler neck, but I bought a length of 2 ¼ bar stock for the caps. I used metric R32 O rings because that was what was readily available here and seemed to fit just right.

Additional considerations led to making 4 shallow depth holes in the top of the caps, the same as shown on dwg 23, since that was easier than making a lever-type securing device. A tool was made for installing and removing the caps.

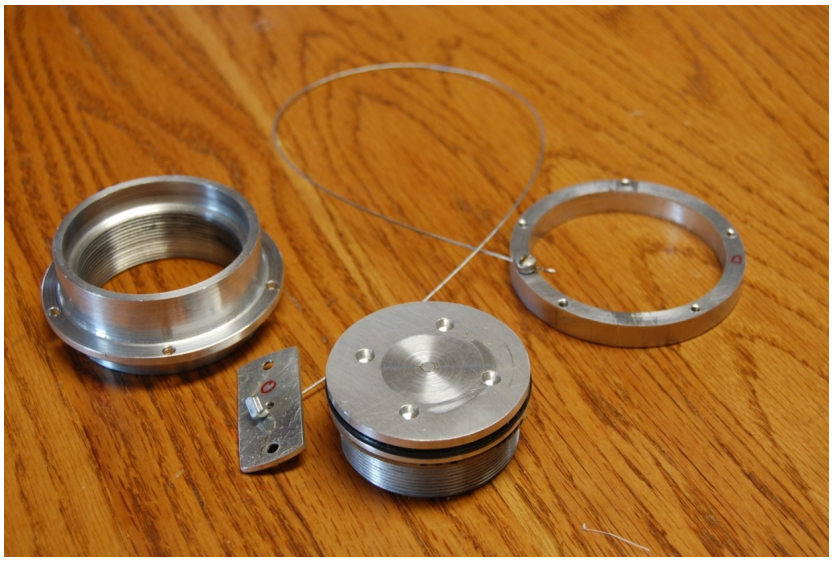
The inside of the caps were bored out for weight savings. The caps are still heavier than they need to be since the lightening hole is only 1 inch in diameter, the size of my largest drill bit. I suppose I could have used a boring bar to enlarge the hole, as I did for the 2 inch bore of the filler necks. The 1 inch hole proved useful in another role however. Since the caps have some weight to them I was concerned that if, when, I dropped one on some lonely airport's ramp the threads would be damaged and would not allow the cap to be re-installed in the tank. I added a lanyard to hold the caps and prevent my bumbling fingers dropping them. The lanyard is a small diameter steel cable with a small rod soldered to one end and the other end silver soldered into the safety wire hole of a fillister head screw. The 1 inch hole made a nice receptacle for the little rod on the lanyard end (it rotates easily as the cap is screwed in and out and so prevents any kinks from developing in the cable) and left plenty of edge distance to accept a #6 flat head screw on either side of the hole. An aluminum strip with a small centered hole through which passes the cable of the lanyard, but not the little rod, was screwed over the lightening hole. The strip is sized such that should the rod come off the lanyard, it will not fall into the fuel tank. (The lanyards came from a weed whacker, my local mower repair shop had them. First I looked at the aircraft parts catalogs, then went to an auto parts store, then to the mower shop. My next stop

was the plumbing supply shop, but the weed whacker parts seemed to be just what I was looking for.)

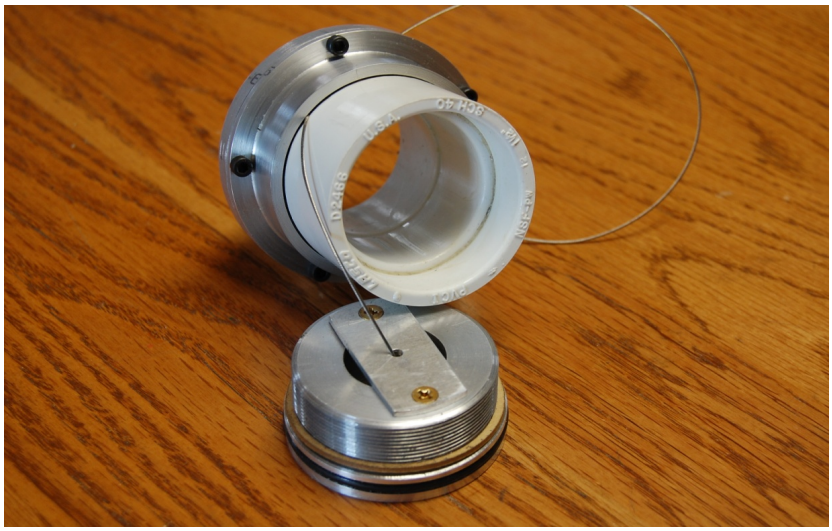
Concerned also that the fuel nozzle would damage the internal threads of the filler neck, PVC couplings of appropriate size were modified slightly to provide a 'sleeve' which can be inserted into the filler then the nozzle fits inside the sleeve thus protecting the threads. Two diameters were used so as to provide a shoulder to prevent the sleeve from falling into the fuel tank. (Wound up at the plumbing supply place after all.)

This is a photo of the completed filler neck and cap. Note the addition of a ring that will be inside the fuel tank securing the filler neck to the tank with 5 #6 socket head cap screws. The ring also holds the fillister head screw which secures one end of the cap retention lanyard.

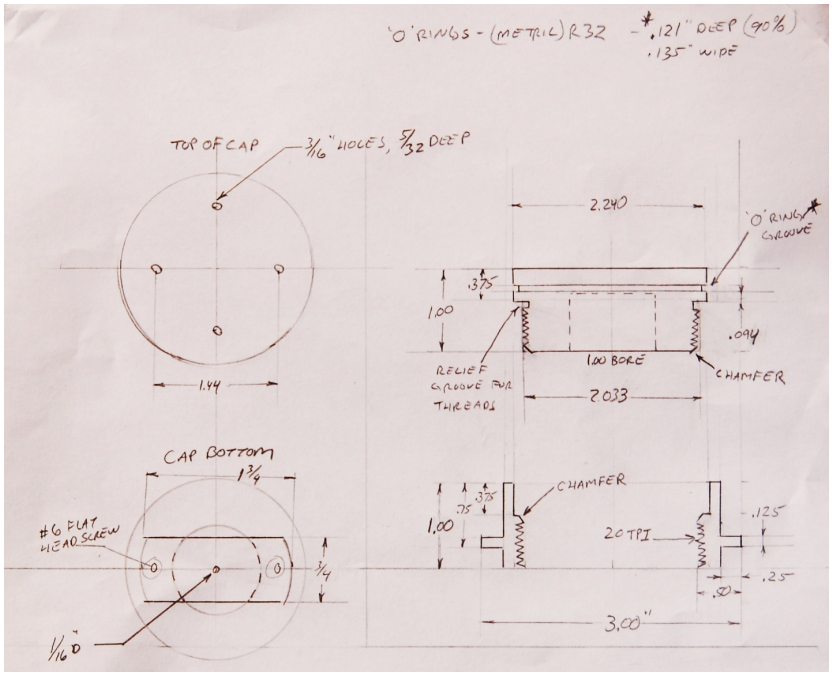
The surface of the cap will be finished when the final installation is complete and it is flush with the aircraft skin.



The PVC insert is made from two different diameter couplings. The larger was bored out to accept the smaller and they were glued together. The smaller was turned to a smaller outside diameter to allow more room for the lanyard.



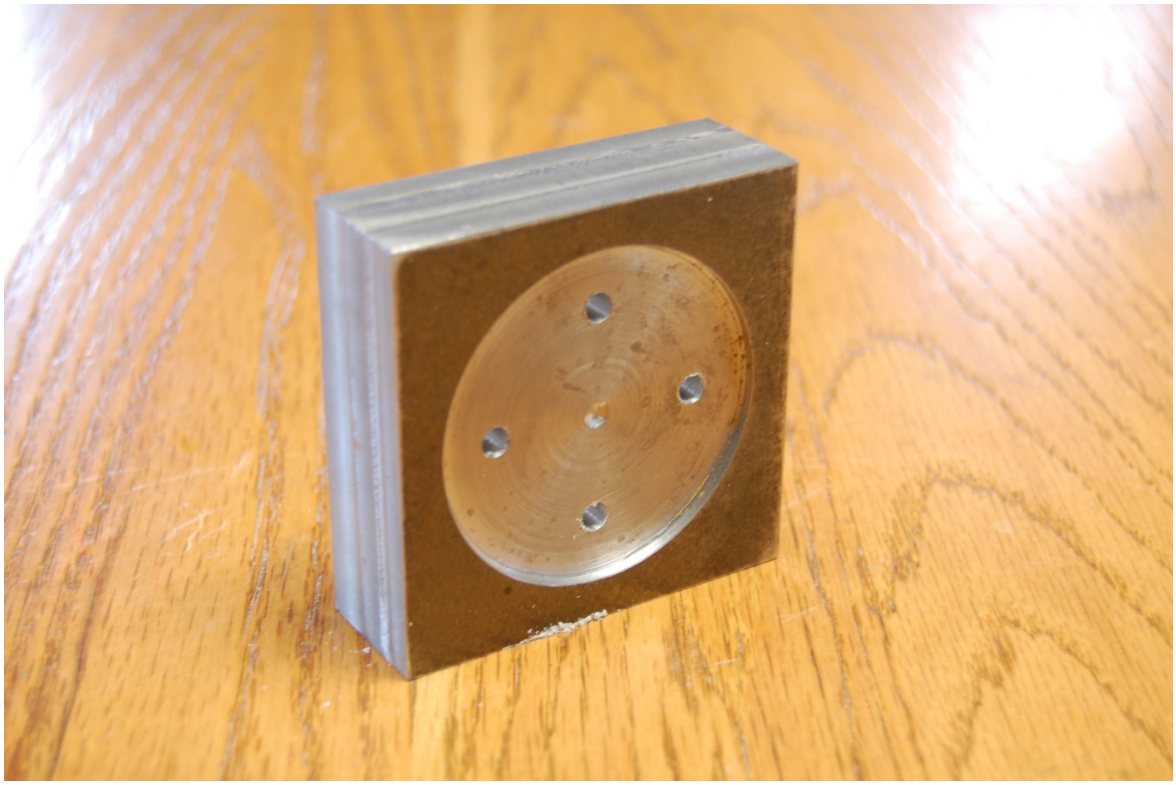
Here is a photo of the drawing for the filler neck and cap. Sorry, no AutoCAD on my computer.



The little plate that holds the lanyard and is screwed to the bottom of the cap is .080 inches thick.

This is the cap installation/removal tool. It is made of the same stock the cap was made from. It has 3 finger grips on the top and 4 threaded brass 3/16 studs on the bottom to engage the 4 holes in the cap. It also has a hole through it to accept a 3/8 inch cheater bar to get more leverage in the case of a stubborn cap. Since all the parts are aluminum I use an anti-seize compound on the threads to help prevent them from sticking.

This is the tool I made to get matched spacing for the four holes in the cap and in the cap removal/installation tool. The depression is just the size for the cap face. It is made from a piece of scrap steel that was cluttering my shop. Set up a drill stop, clamp guide and cap together, drill the holes.



I made three sets in the end after deciding to use one for the fuselage tank too. Actually I made four sets but ruined one while test fitting the threads.

Hope they all work like I think they should.
Happy building,
Ray Call

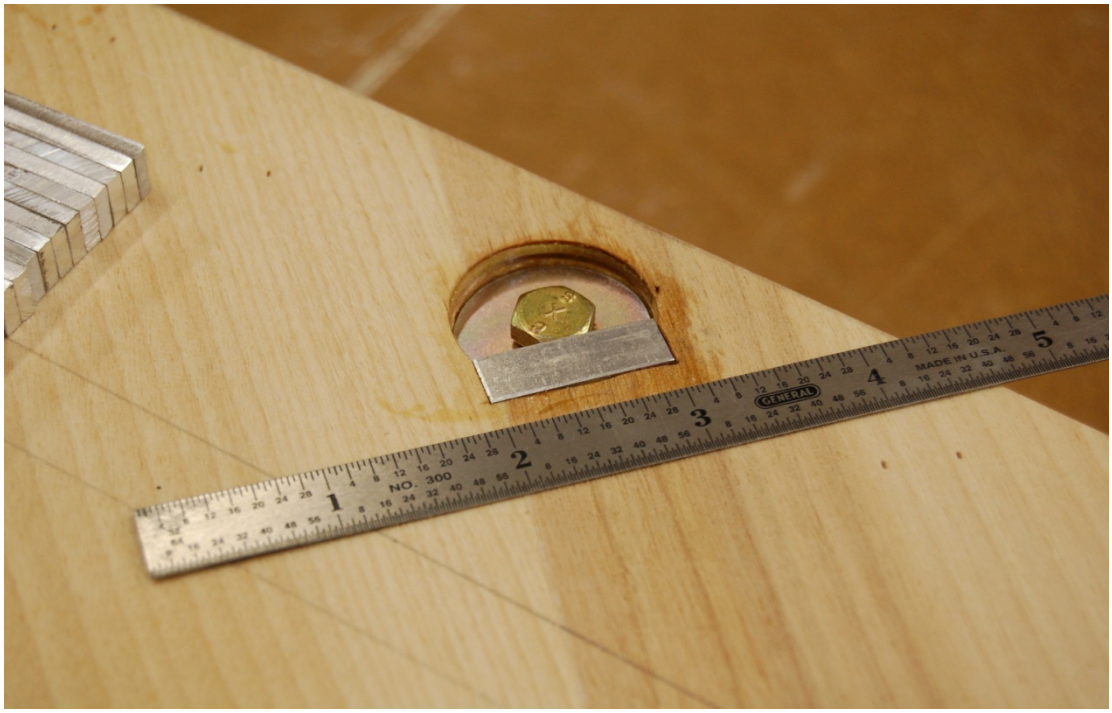
SPAR BOLTS
BY RAY CALL

If you aren't tired of my stories yet, here is another one.

While looking at DWG 32 and 36 that shows the through-the-spar landing gear mounting bolts I became concerned about my ability to braze the bolt heads to the AN960 washers in such a way that the washers would sit evenly in the counter bores and properly distribute the load. After considering a number of alternatives I decided to make small aluminum rectangles that would be mortised into the spar face in such a way that one of the bolt head flats would contact the rectangle and thus prevent the bolt from turning.

There was also the challenge of making a tool to make the counter bore for the washers. Noting the AN960 washers are 1 1/8 inch diameter I picked out a matching forstner bit. To hold the center of the bit in the correct position I fitted a length of ¼ inch aluminum tubing through the bolt hole. I had to sand the tubing a little to reduce its diameter to make it tight, but not so tight I could not insert and remove it. With the tubing in the hole and flush with the surface, the center point of the forstner bit engaged the tubing and held it in place so the counter bore was concentric with the bolt hole. The tube gets reamed out to match the center point and I removed that length a few times while the holes were drilled. I practiced on a scrap and verified it worked before attempting to use the process on the spar. All 16 landing gear bolt holes and both seat rail bracket holes were done with this method and it worked every time.
The aluminum rectangles are .125 thick, 1 1/16 (17/16) inch long and 11/32 wide. Sized to closely match the washer and require a minimum of wood to be removed to make the mortise. I cut them to size on the mill/drill to make them interchangeable. But you could number each to ensure proper match when you make the mortises since it is important that they fit snugly.

In this picture the counter bore has been sealed with a coat of West System epoxy.



Happy building
Ray Call

MAIN GEAR
SOME ALTERNATE IDEAS

Adrian McClelland....Australia

This is not meant to be an article on constructing the main gear of the GP4, but more to give some alternatives that may make the building easier.

There are a few of us that are following the John Evans style of gear design, but like most things on this airplane, everyone seems to add their own variations.

I haven't built my wing as yet, but I have made a jig to construct both the left and right gear.

Gear Jig with left gear in place

John covered his modified gear design in GP4BFN#46. This means that the hydraulic ram and retract link positions are reversed....."Why?"you say. Well, this allows the retract link to connect to the main gear leg with a clevis and rod end bearing, instead of that bolt on the original plans. This has been an area of concern with the gear.

The retract link and ram reversed.

Link connected to leg with clevis and rod end bearing.

The big difference in mine (and Bob Ringer and Wayne Tomkins) is that John built his before the updated plans with the trunion on the retract. arm.

I'll also say now that Bob Ringer and I have had many long conversations regarding the main gear, and whilst our gear varies slightly, basically we agree on some major items.

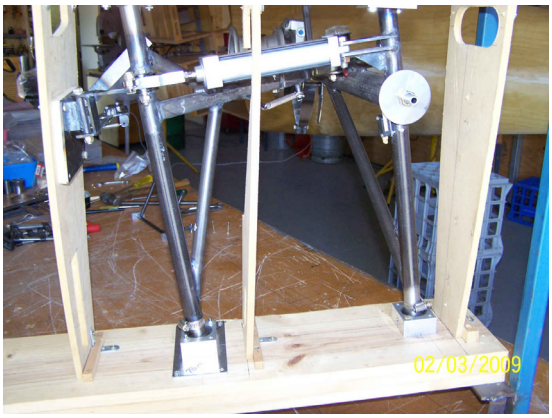
Firstly, the gear is constructed mainly of 1/8th" wall thickness tube where possible, trunions, outer and inner gear legs, clevises, etc. This saves doubling wall thicknesses of the main gear, makes welding easier, and most importantly, increases the structural integrity of the gear.

Main gear Alternate Ideas

Yes...I know there is a weight penalty, but it is minor, and a better option than breaking bits of your airplane with a gear collapse.

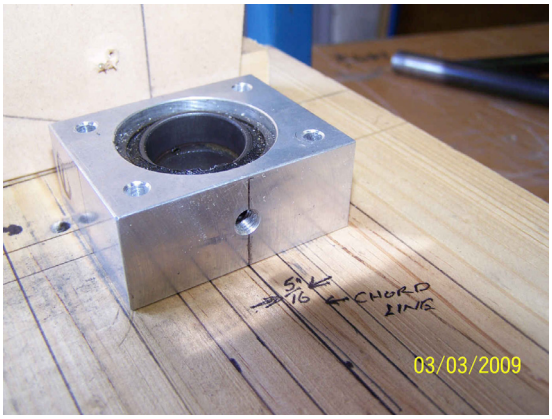
Trunions: I made both my trunions (gear leg and retract arm) the same diameter...1", with 1/8th wall thickness tube. This means I only have one size bearings and just keeps it a bit simpler.

Bearings: Self aligning bearings in a machined block. This saves the agony of trying to drill bearing blocks at the angles of the trunions to spars.



Trunions the same diameter.

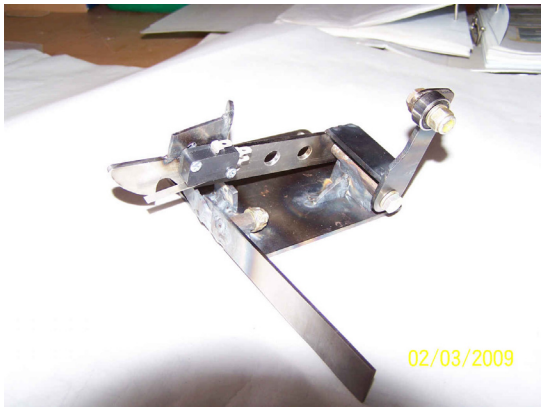
Self aligning bearing and bearing block.

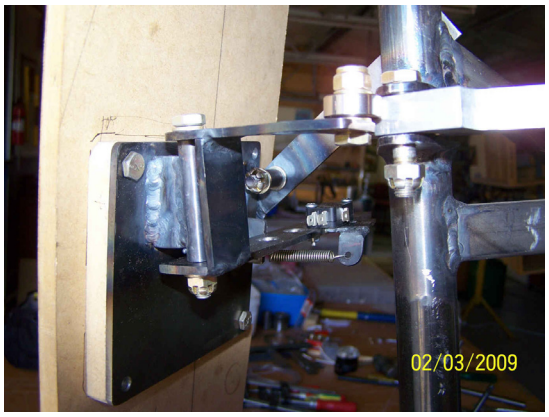


Bearing block in place.

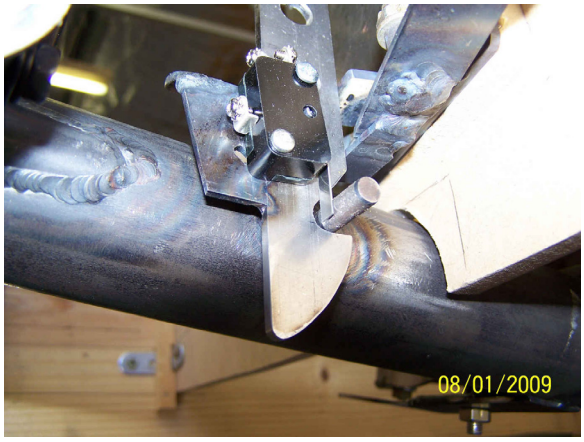
Main gear Alternate Ideas

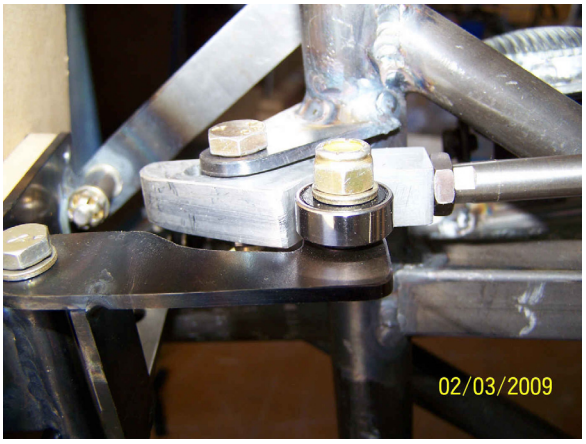
Uplock: My uplock and emergency release arm are built as a complete unit.





Uplock unit. Note offset of roller arm for release cam. The offset is because of the reversing of ram/ retract. arm





Uplock/microswitch Uplock release cam

Gear leg: Gear leg inner and outer tubes are of 1/8th" walled tube.

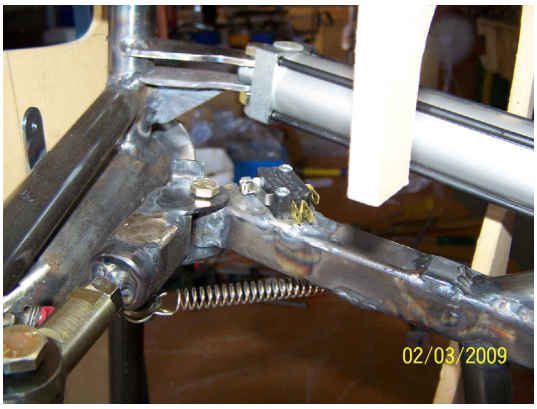
The ½" upper tube is also 1/8th" wall thickness, which allows the top of the tube to have a ½" thread cut into it, instead of having to weld in an AN8 bolt.

Main gear Alternate Ideas

Upper rod, with thread cut...to be trimmed to length when installed in wing.

Both left and right gear have been operated in the jig, and works like a charm.
I hope this is of some help, and gives some other options for building your gear.
Here is just a few other assorted photos .

Retract. link micro switch in down/locked position.

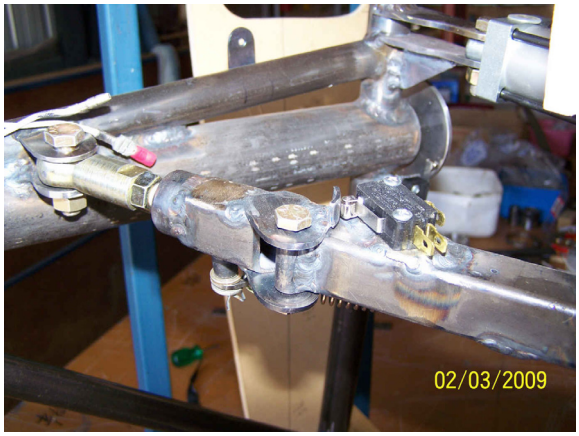


Retract. link cycling.

Retract. link and spring....up position

Squat switch.

Main gear Alternate Ideas



That's about it for now,

Happy Building

Adrian McClelland—Australia

(Adrian has also provided us some video of the main gear cycling in the jig which will be uploaded to the website for all to download and see—Elton)

COMPLETED AND FLYING GP-4s	
PLANS NUMBER	NAME
0	George Pereira
1	Darry Capps
2	Jake Jackson
8	Steve Baum
31	Pat Salomonde
49	Thomas Evans
134	Ernie Holmes
193	Mike Traud
202	Don Austin
233	John Reinhart
260	Phillip Foshee
283	Tony van den Heuvel
292	Paul Guglielmi
323	Jean Claude Luxey
360	Lynn Sheets
366	Jim Simmons
385	Les Conwell
396	John Evans
?	Tore Jostein Lie
?	Bernie Griffin
502	Mike Mahar
Send updates to gp-4@woh.rr.com	

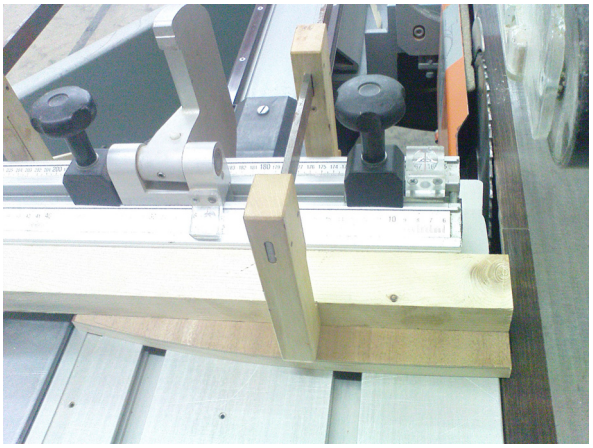
CUTTING THE RIP ENDS

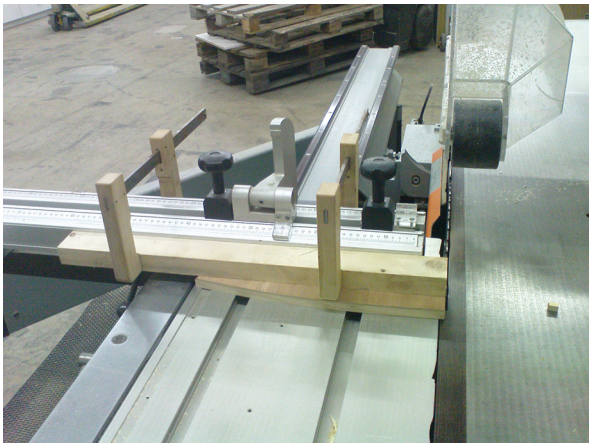
By Uwe Seimetz, Builder #556, the first GP-4 builder in Germany.

1. I clamp a strip of wood on my left adjustable stop, with a strong gap from the rip thickness between the table and the wooden strip.
2. First I cut the clamped wooden strip at the right angle.
3. Then I put the rip in the gap, the centerline along the wooden edge.
4. The marked rip length set on the right end of the wood strip.
5. Its a very simple and fast art the cut the end, and the cuts are at the right angle every time.

If you can rotate the saw blade on your saw, it is possible to make cuts at every angle.

(see pictures)





BUILDING THE TORQUE MOUNT BRACKETS

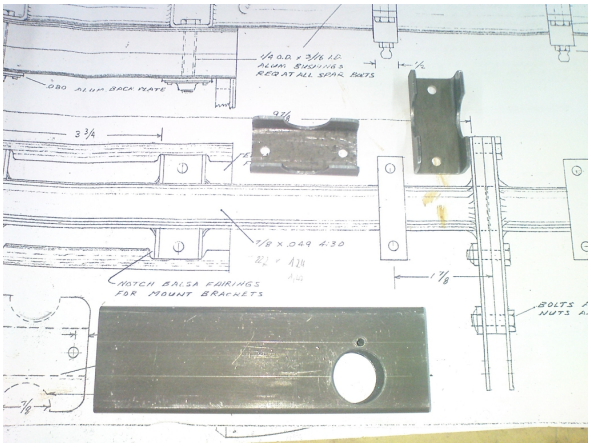
Uwe Seimetz also has a suggestion for building the torque mount brackets.

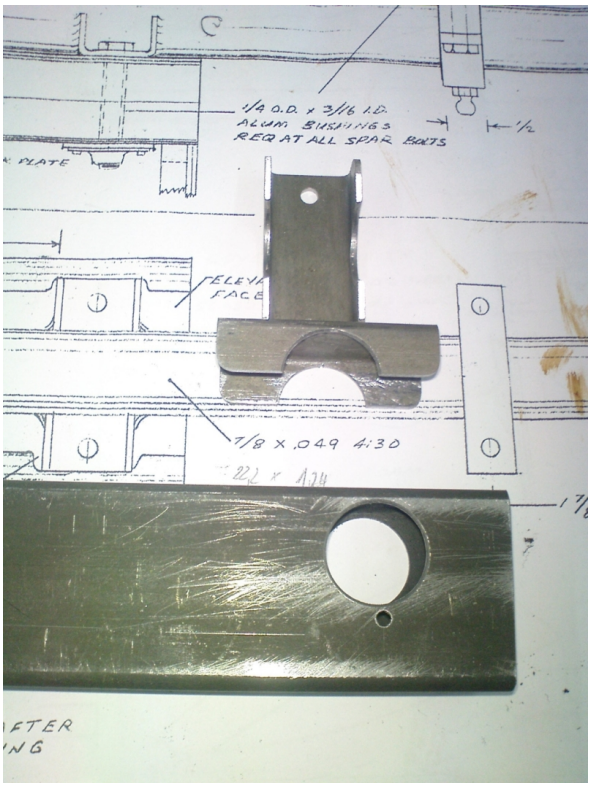
Read Uwe's idea below:

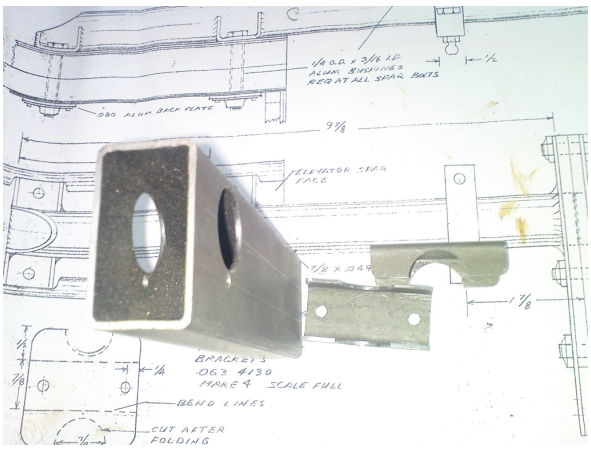
George said to cut the brackets out of sheet metal and then bend them in a U bracket. But it is very difficult to hold the sheet metal in exactly the right position, confirming the dimensions and the proper radius of the bends, all the while maintaining the correct angles while bending the bracket.

My suggestion is to use a 1 x 1-3/4 x .065, 4130 rectangular tube. Cut it the length you want (I leave mine a little longer to have more to hold on to while I'm working on it), drill the holes for the bolts and than drill a 7/8 hole for the torque tube. Then I cut the rectangular piece exactly through the centerline of the hole I drilled. Lastly I cut the length down to the right size for the brackets.

This method saves a lot of time, the brackets are exactly the right dimensions and radii, and are all exactly the same.







WWW.OSPREYAIRCRAFT.COM

WWW.SPRINGFIELDAVIATION.COM

Newsletter:
Elton Cultice
800 Geron Drive
Springfield, Ohio 45505-2812
gp-4@woh.rr.com www.springfieldaviation.com

George Pereira
Osprey Aircraft
3741 El Ricon Way
Sacramento, CA 95864
Ph: 916.483.3004 Fax: 916.978.9813
www.ospreyaircraft.com
ospreyairgp4@aol.com

The Osprey Aircraft GP-4 newsletter is published by Elton Cultice (a builder). The ideas and opinions expressed in this newsletter are those of the individual submitter and do not necessarily reflect those of Osprey Aircraft. Application of the ideas and / or suggestions presented herein are the sole responsibility of the aircraft builder / pilot. All materials submitted for publication are subject to editing, and will be returned upon request. Inclusion of a commercial advertisement is not an endorsement for that product. We welcome your suggestions, ideas, opinions.

Electronic copies of the newsletters plus more can be found at www.springfieldaviation.com . Please share them freely.

CLASSIFIEDS

For Sale:

Pre-Fabricated composite components for the GP-4. Cowling, Exhaust Blisters, Inlet Ramps, and Tailcones. Individual parts or complete packages available.

Cowls are constructed with West System ProSet 125 Resin and 225 Hardener. They are hand lay-ups of 4 layers of 6 oz cloth, and 2 layers of 10 oz cloth.

For current pricing, please call or send me an e-mail.

Bob Ringer

Halifax, Canada

Ph: 902-876-2871

Cell: 902-483-4611

E-mail: bobringer@eastlink.ca

For Sale:

Quality Custom fabricated metal components for the GP-4. State of the art equipment used by a certified welder to construct parts on the jigs obtained from Darry Capps.

Raymond Beazley

Dartmouth, Canada

Ph: 902-465-6141

Cell: 902-497-4187

E-mail: raymondbeazley@hotmail.com

- order by the piece, sub assy or pkg
- Parts tagged for identification
- All parts are cleaned and primed
- Small items within a week, complete packages up to six weeks

For Sale:

Fuel Tanks made by one of our builders, Ray Call. Current price as of August 2009, $850 per set (reduced $50 due to reduced cost for supplies). 4 weeks lead time. Shipping cost established on a case by case basis....For more info contact Ray direct.

Ph: 812-934-3260

E-mail: rtcall@gmail.com