

THE CANARD PUSHER

JANUARY '76

NUMBER 7

NEWS OF THE VARIVIGGEN AND VARIEZE PROGRAMS
(very vig-in) (very easy)

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JAN, APL, JLY, OCT Bldg. 13, Mojave Airport
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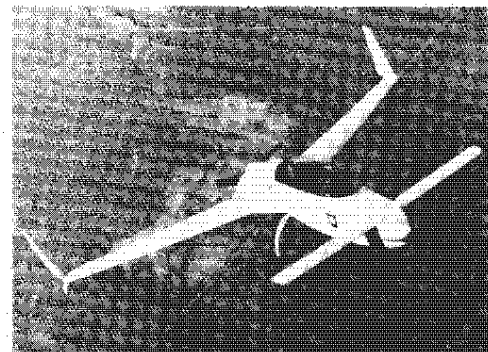
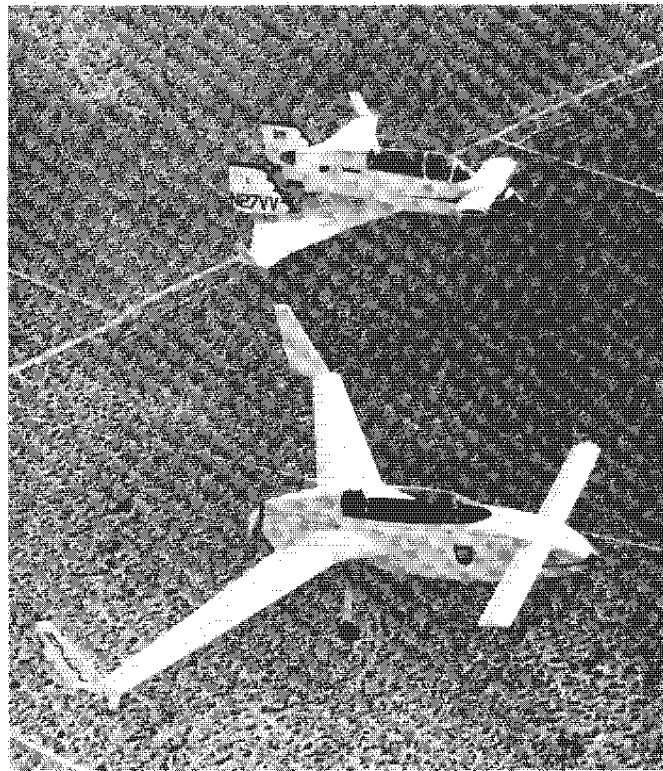
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RAF ACTIVITY since the October newsletter has been primarily the construction of the VariEze homebuilt prototype. This aircraft (N4EZ) is the Continental-powered aircraft that we are basing the plans on. See "Canard Pusher" number 6 for a complete description of the differences between the two prototypes. Construction of N4EZ was started on 15 October 1976. It is now (14 January 1976) being primed and finished. Yet to be completed are the cowling, instrument installation and hooking up the engine controls. It should be flying by the first week in February. Assuming that all flight tests go as expected, including spin tests and dive tests to 240 kt, and no large delays are encountered, we expect to have the plans and construction manuals on the market in April or May. Most likely, our April "Canard Pusher" will be the first announcement of plans availability.

VariEze static load tests conducted recently include the canard, winglet attach, elevon brackets, monocoque wing section, and several component tests. All results confirm the high safety factors previously claimed. We plan to static test an entire wing and attachment as soon as we can find something strong enough to mount it on!

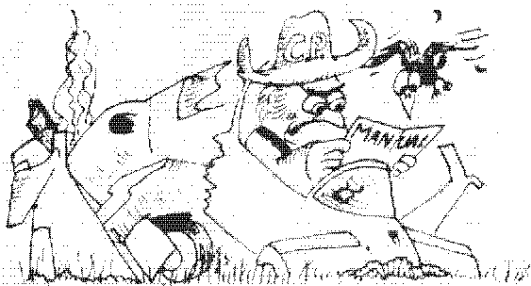
Both the VariViggen and VariEze have been flying extensively over the last few months. N7EZ now has 220 hours; N27VV, about 570. Pilots checked out for solo in the VariEze include Peter Garrison, Tom Jewett, Peter Lert, George Mead, Jerry Slocum, Tom Poberezny, Dick and Burt Rutan. Approximately 75 people have been given back-seat rides. Both the VariViggen and VariEze have been relatively maintenance-free over the last several months.

Since November, we have been giving weekly demos of our aircraft. Every Saturday from noon to 2 P.M. we roll the airplanes out of the hangar, discuss their features, give flight demos and rides in the VariViggen and VariEze. The demos start in our building - 100 yd southeast of the tower building on Mojave airport. We plan to continue giving these demos at least until the VariEze is on the market (April or May 1976). Until then, do not expect to see the VariEze at any other time of the week. Showing it on an individual basis has taken a large part of our time and has delayed the program. After it is on the market, come by at any time!



We still have not seen any VariViggen projects appear in the "Sport Aviation" "What Our Members Are Building" page. Come on guys - send Jack Cox a photo and description of your project.

THE VARIVIGGEN OWNER'S MANUAL has been finished at last! It will be available for mailing in mid February. The owner's manual is a complete operational handbook for the plans built VariViggen including normal and emergency procedures, loading graphs, operations checklists, complete performance information for standard and SP wings, 150 and 180 hp. Also included are an expanded flight test section, maintenance checklists, record keeping section and much previously unpublished operational info. The manual is in a handy 5-in by 8-in size so that it will fit in the cockpit map pocket. The owner's manual will cost \$6.00 including first class postage (within U.S.A.). This manual is a must for those close to first flight.

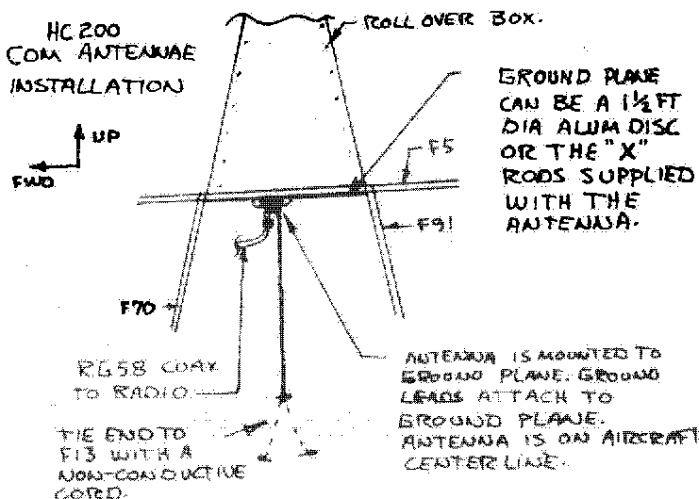


NEW VOR AND COM ANTENNAS AVAILABLE

We have been working with a group of electronic wizards on the development of a set of antennas for the VariEze and the results have been excellent. These units are 'zero drag,' immersed-type, antennas, specifically designed for composite or wooden aircraft. The performance of these units is equal to the very expensive broad band antennas. While designed primarily for the VariEze, these antennas are excellent for the Viggen as well.

We've received a number of comments on the VariViggen plans VOR antenna, most indicating that we don't show the 'optimum' antenna. This is true, but don't rip your canard apart if it's already installed. The plans antenna works well, but if you want the best possible antenna, there are other ways to go. Frank Stites of Stites Engineering Company, Wayland, Mass. has been kind enough to run a series of tests on antenna efficiency for us. He found that the antenna shown in the VariViggen plans received between 65 and 70 percent of the available signal. Extending the plans antenna arms by 2.45 inches (14.15 to 16.6) improves its reception to between 78 and 85 percent of the available signal. Our new antenna receives between 83 and 92 percent of the signal. There are antenna designs which will capture about 98% of the signal, but they don't fit into our aircraft very well. For those of you who are radio buffs, the VSWR ratios of these antennas are plans antenna (14.15 long) VSWR 3.2 to 4.2, plans antenna extended to 16.6-in length VSWR 2.2 to 2.8, H.C. 100 (new) VSWR 2.5 to 1.7.

The new antennas are available now directly from the manufacturer (not RAF). You canard pushers (RAF customers) will get a \$10 price break on each of the NAV and COM antennas from normal retail prices. These antennas require no balun (it's internal). You guys who just can't wait to have a VariEze part in your garage, can get these antennas early and you Viggen builders will find them very good antennas (see installation sketch below). Order directly from H.C. Communications, P.O. Bx 2047, Canoga Park, Ca. 91306. The prices are HC100 (NAV) \$28.50 (normally \$38.50), HC200 (COM) \$26.50 (normally \$36.50). All that you need is a B.N.C. connector on the end of your antenna lead. California residents don't forget to add 6% for tax. H.C. Communications promises delivery within 14 days of receipt of your order.

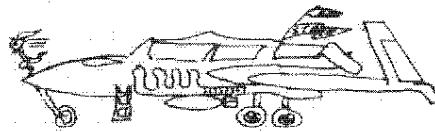


NAV ANTENNA IS INSTALLED AS SHOWN IN THE VARIVIGGEN PLANS EXCEPT NO BALUN IS REQ'D

Should you have questions which you want answered directly, please send a self-addressed, stamped envelope for our reply.

VARIVIGGEN FIBERGLASS PARTS

RAF has been handling the cowl, tank cover, nose cone, plexiglass dome, and visor for a year now with excellent results. These parts have been manufactured by a firm next door here in Mojave, so delivery has been excellent. This firm has decided to discontinue manufacturing those parts for us, and we're changing to another very capable firm. Unfortunately, our new manufacturer isn't right next door and to avoid any delay in delivery, we will be sending you directly to them with parts orders. We feel that this arrangement will get parts to you the quickest and most economical way. We do have a few ship-sets left here at RAF for those of you on the west coast who want to stop by and pick them up. We aren't equipped to pack or mail these few remaining sets. Send your new orders to Monnett Experimental Aircraft, Inc., 410 Adams St., Elgin, IL. 60120. There may be initially a small delay until Monnett gets production going on our tooling, but this should only take several weeks. The parts involved are F23, F27, F25, F28 and V-COWL.



VARI-EZE UPDATE

Each newsletter we try to answer the questions sent in the past three months which haven't been previously answered in newsletters or the information kit. If we miss your favorite this time, write and ask again.

Cost: We look at the airframe cost two ways, the cheapest and the easiest. The biggest single factor is the engine; you can scare up a zero-since-major A-65 Continental for \$700 if you're a good scrounger (\$1500 if you aren't) or spring for a new \$4000 O-200 from Teledyne. If you buy only the raw materials, no machined parts, weld your own engine mount, etc., you can probably pump out an airframe with instruments for about \$1300. On the other hand, if you buy all prefabricated parts that will be available, landing gear struts, machined nose gear parts, main gear axels, engine mount, stick assembly, wing attach fittings, fuel caps, nose gear retract motor, spinner, finished rudder pedals, canopy, cowling, etc., you can invest about \$2400. There will be alot of happy combinations inbetween these two extremes.

Engines: Don't buy one yet. We'll make our recommendations after we've flown N4EZ. We plan to solve all the installation problems with the small Continentals and then proceed to the VW installation. No, Fred, you can't use an O-320 Lycoming in your Eze, not even an O-235, because they're too heavy. The Eze is basically a 60 to 80-hp airplane; The 100-hp Continental O-200 without starter and a light alternator is the maximum. We are using an O-200 only so that we can qualify the heaviest and most powerful installation and insure its safety. If the engine you're thinking of weighs more than 200 lb, forget it!

Heavy Pilots: 210 lb is considered top. You could fly with lead in the tail, but it's bad practice and severely compromises the design. The VariViggen is more tolerant of you heavies. You tall troops can relax, though; 6 ft, 4 in fits just fine. Anybody over 6 ft, 6 in will have to raise the canopy, which is a VariEze job if done during construction.

FAA: You guys who aren't members, should be. If you aren't a member yet, borrow your friend's January "Sport Aviation" and read the 10-page Eze article. It's a more comprehensive article than any of those previously published, particularly in regards to the structure.

Registration Numbers: The FAA assigns these, not RAF; contact your local GADO for the application procedure.

Record Flights: These take time and gobble money. We have delayed the coast-to-coast attempt until after plans are out.

Wives: Due to your dress making skills, your participation in VariEze construction can be much more than in conventional construction. In fact, you will probably be responsible for about 20% of the effort, cutting the glass cloth. Cloth cutting needs to be done on a clean table with a good pair of scissors. Your skill in this area is probably better than hubby's and we're sure he will appreciate the help.

Mods and Goodies: Don't ask about dual controls, inertial navigation systems, lighting, heaters, starters, inverted fuel systems, ad infinitum, until the basic airplane is finished, thoroughly tested, and you have plans and parts in your hot little hands. We will develop many of these, but only after the basic configuration is completed.

Foam: All foams (kit includes three types, five different densities) will be available in the correct odd ball type and sizes from our distributors, as soon as the plans are out.

Epoxy: Our education is improving all the time. The Shell epon epoxy that we had been using is late 1950's technology. We are working with some more modern materials that have better peel strength and will tolerate higher heat without softening. These advances make for a stronger airplane and allow a choice of colors where the older resins commanded a basically white airplane. We have a bunch of testing to do on this resin yet, before we release details, but if all goes well, you can have that char-treuse airplane after all.

In recent weeks, we've had the opportunity to discuss at length our structure with the advanced composite materials department of a major aerospace firm. These guys spend about three to four million dollars a year on composite research. We were very much pleased to find that these true experts in composite structures had only complementary comments for our approach. This group has also been very helpful in recommending primers for complete protection of the foam and resin from ultra violet radiation.

Misc. Performance: No, you can't hit the prop when you flare to land or rotate to take off.

Altitude performance is excellent; even a normally aspirated engine will take the airplane higher than the pilot's lungs can go without oxygen.

No, there isn't any pitch trim change with throttle. If you cycle the throttle from idle to full suddenly, all you get is acceleration with zero pitch or yaw.

Specifications	Continental O-200	Continental A-65	180cc Volks.
Span-Ft. - Wing/Canard	22.3/13.2	22.3/13.2	22.3/13.2
Area-Ft ² - Wing	53.6	53.6	53.6
Canard	13.7	13.7	13.7
Total Area	67.3	67.3	67.3
Road Trailing Width - Ft.	5.7	5.7	5.7
Empty Weight - Lbs.	490	458	440
Useful Load - Lbs.	490	417	410
Gross Weight - Lbs.	980	875	850
Wing Loading - lb./ft ²	14.4	13.0	12.6
Power Loading - LB/HP	9.8	13.5	13.7
Design "g"	±6	±6	±6
Fuel - Gal.	20	20*	20*

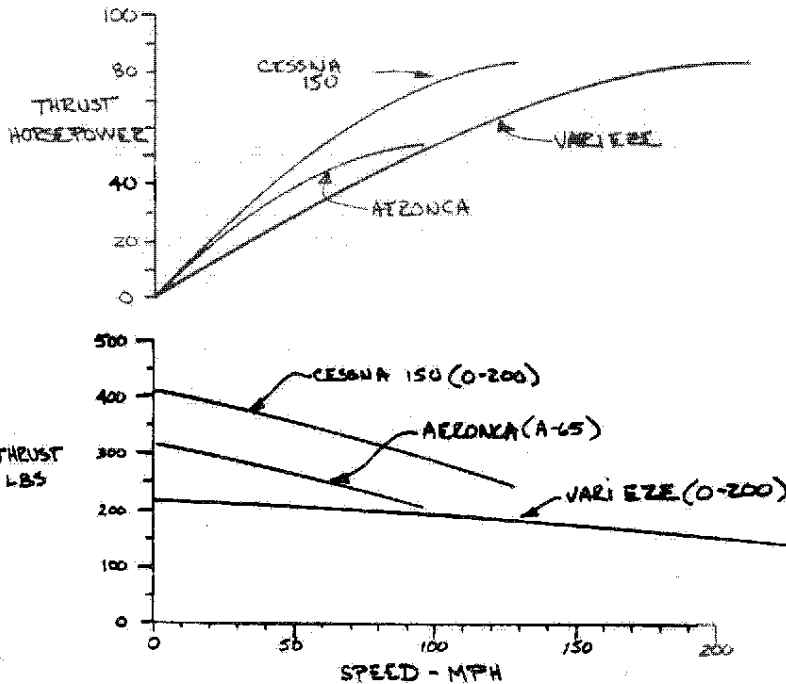
Performance at Gross Weight			
Take Off Distance - Ft.	750	980	1050
Rate of Climb S/L - FPM	1800	900	900
Max. Cruise Speed (25%) - KT/MPH	181/208	156/179	152/175
Range at 25% Power - Miles	700	850*	870*
Economy Cruise Speed - KT/MPH	126/145	109/125	109/125
Range at Economy Cruise - Miles	1100	1200*	1200*
Stall Speed - KT/MPH	52/60	49/55	48/55
Landing Distance - Ft.	800	700	650

Performance Single Place, 2 Hr. Fuel			
Take Off Distance - Ft.	550	780	800
Rate of Climb S/L - FPM	2600	1600	1500
Stall Speed - KT/MPH	44/50	42/48	42/48

* For a crew weight of 300 lbs. total. Fuel and range is reduced for heavier people.

Cabin Noise: The cabin noise level in 7EZ is lower than most light airplanes; however we plan to improve this even more on 4EZ with the addition of a muffler.

Pusher Engines: As you engine experts know, the Continental O-200 (100 hp), C85 and C90 engines have a special crankshaft for an FAA-approved pusher installation. These special cranks are rare and expensive. We don't believe that these special parts are necessary for the VariEze. The difference between the "pusher" O-200 B and the tractor O-200 A is a reinforced flange to take the high static thrust loads that you find in amphibian type or other slow aircraft. The O-200, C85, C90, C75, A80, A75 and A65 crankshafts are almost identical (not interchangeable) and the A65 engine is approved as a pusher without modification. Because of the fixed-pitch prop, designed for 200-mph cruise, the thrust loads on the 100-hp O-200 A are lower than they are on the 65-hp A65 in a "normal" installation. It is possible that you might have to plug an oil passage in your crank case for improved lubrication. We are testing this on 4EZ and will include our findings and recommendations in the plans and later newsletters.



Dealers: We've had a number of inquiries from individuals wanting to be "dealers" or "retailers" of plans, parts, etc. Our current situation is that we are under contract with several very reputable firms for the exclusive manufacturing and retailing of Eze materials and components. These contracts are in effect for two years as exclusive agreements. After this initial period, we will address expansion to a larger dealer network. In the meanwhile, we suggest that overseas customers wishing to save on import costs, make volume orders.

Building Skill: Many of you have expressed concern about the skill required to build the VariEze. If you can chew gum and walk a straight line simultaneously, you won't have any trouble at all. For those who have trouble with this, we will be holding seminars and demonstrations around the U.S. after the plans are out. Seriously, the skill required to make a good, safe structure is less than that required for sheet metal, wood, or welding.

Forget any experience you may have had with fiberglass using standard industrial weaves or boat cloth. The special weave cloth used on the VariEze requires only about one-half the time to lay up as you may be used to, and the low resin amount required to wet out the cloth results in a significant weight savings. The VariEze plans are much more than just drawings; they are a very detailed "education" and step-by-step construction procedure description. We even plan to tell you how many man-hours you should spend in each step. This allows the builder to compare his performance with a norm and will allow him to tell, at any time, how much work he has yet to do.



Tools: We have also received many inquiries about the tools required to build the Eze. Most tools are of the common tool box variety: screw driver, wrenches, saws, hammers, etc. This is a short list of the special tools: hot wire saw (homemade using safety wire and an auto battery charger), moto tool dremel or weller home shop hand grinder, X-acto knife, epoxy ratio pumps or balance, tongue depressors, surform file, scissors and butcher knife. A band saw (wood and aluminum cutting), small sander and a drill press are nice but not required.

Starter: OK, you guys who insist on installing an electric starter, look at what you're doing to your airplane. First, you add a 16-lb starter to your engine, then add a 25-lb battery in the nose to balance and power it, then add six pounds of cable to connect the two (both ways - You can't ground to glass and foam). Presto, you've added 40 pounds of empty weight that does nothing except in the first five seconds of a flight. A small seven-lb battery gives you everything you need for avionics and lights. For the privilege of pushing a button once each flight, you have reduced your useful load carrying ability by 10%. Look at it this way, your starter equipped airplane will go 330 miles less with the same takeoff weight as my hand-propped model.

VARIVIGGEN PLANS CHANGES

Be sure to incorporate these revisions into your plans now.

Location PL - Plans
TR - Tech Report
NL - Previous Newsletters
CAT - Catalog

Category of Change

MEO - Minor error or omission
OPT - Optional improvement
DES - Desirous change; does not effect flight safety but should be incorporated to improve aircraft or correct a fault.
MAN - Mandatory change; must be incorporated as safety of flight is affected.

Category	Location	Change
MEO	PL pg 41, pg 57	RP1 sketch - Tube size 5/16x.035 not 5/16x.063 for AN4 bolt.
MEO	PL pg 40	Change AB belcrank rivets to -15 not -9 as shown.
MEO	PL pg 30	Aft end of OW2 sq. tube should be welded closed or filled with a phenolic block.
MEO	PL pg 15	C1 is under size to mate with CR. Either file CR5 down to match C1 or make C1 over size to match CR.
MEO	PL pg 47	16.7 dim should be 16.2 on MG14 detail.

SP WING PLANS

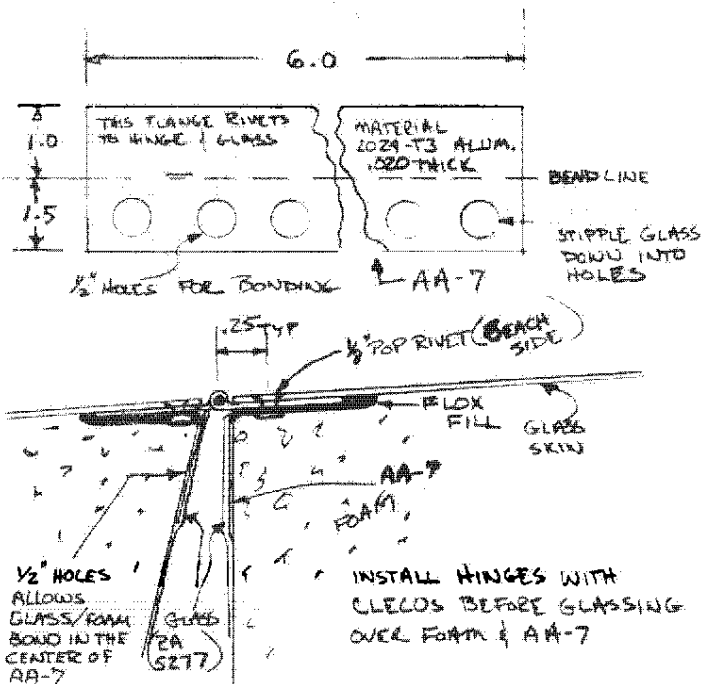
As we mentioned in newsletter six, the special performance wing plans are ready for mailing. The plans price of \$39.50 (Calif. residents add \$2.37 tax) includes plans and a very complete construction manual with instructions so detailed, that they may insult your ingenuity! The plans include full-size rib lofts, composite rudder, and winglets. The construction manual includes photos.

A number of builders have asked us if the composite structure of the SP wing can be used on the standard wing. We don't recommend anything for you that we haven't flown ourselves, but, we don't see any reason why the information in the SP plans, together with the lofts and information in chapters 3 and 10 of the standard plans couldn't be used to build a set of composite panels for the standard airplane. The composite wing would be a stronger wing than the metal wing. Since the ailerons on the standard wing are larger than the SP ailerons, the hinges for a composite standard wing should be 10 inches long instead of 6 inches long. The addition of winglets to the standard wing should also improve it's performance, more so, than the SP wing because of the lower aspect ratio.

Since we had the SP plans printed, we have developed an optional aileron (or rudder) hinge stiffener plate which replaces the plywood parts and screws with a sheet metal angle as shown in the sketch. This method makes the aileron (rudder) to wing (stab) fit up much easier. To install, remove a 1/8" gap of foam, 1-in deep adjacent to

the skin, bend the .020 alum AA7 angle to fit flush along the foam face and against the hinge. Hold in place while drilling holes through the skin, hinge, and AA7 for rivets. This can be done on both sides at once with the aileron in place on the wing. Use clecos to hold the hinges while drilling. Remove the hinge and AA7, fill the gap with flox and install the hinge (one side at a time with the hinge pin removed) using pop rivets. The glass skin on the vertical face should be applied now to give a wet bond with the flox used to mount the hinge.

AA7 REPLACES AAL, AA2, & AAG



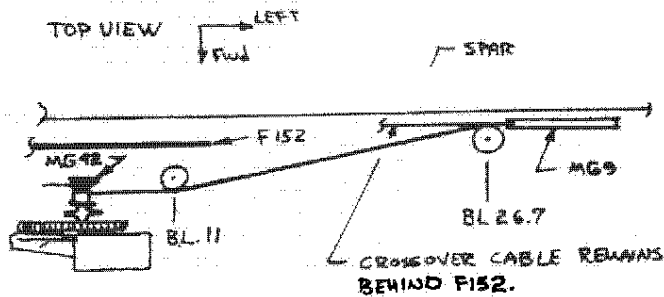
VARIVIGGEN BUILDING TIPS

Jim Cavis moved his MG9 pulleys outboard 0.15" as suggested in newsletter 4 to use the shorter MG4 beams supplied by RAF. With the new location for the pulley, Jim found it to be advisable to bend the uplock belcrank inboard and put the bolt on the outside (see photo). The photo also shows the fairlead pulley on the aileron cable to provide additional clearance with the gear parts. If you have the short MG4 beams, you may find that its easier to weld a strip of steel on the end to extend them to the plans dimension rather than move MG9.

Jim also cut a 2-1/4" dia hole in F152 above the MGMA to aid in the installation of the MG42 spool and so he can see the MG42 spool in action. He reports the entire gear is now complete and operation is satisfactory.

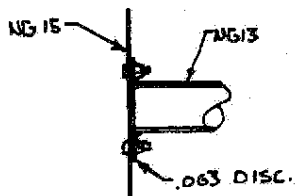
It is possible to get the cables forward of the spar instead of in the close quarters behind F152. I did this on N27VV with pulleys as shown in the sketch. You can use this method if you wish to have better access to the cables and turnbuckles. I don't think the extra complexity of pulleys and brackets is worth it though.

Jim reports it took six people and a case of beer to turn his Vigen over after skinning the bottom; sounds like an overkill to me!



Orv Winfield reports that auto parts stores carry what they call a "tank valve" - a tire valve with metal 1/8" pipe thread. This should work fine on the nosegear strut. He paid 56¢ for his.

Several builders have reported difficulty with warping when welding NG15 to NG13. This can be avoided by welding a small ring of .063 steel to the tube and bolting on NG15 with six #8-32 screws (see sketch).



When cutting WR25 it is not necessary to cut the notches for Spar H and I. Spar H and I do not have to pass through WR25; adequate support is provided by WR24.9 ribs. Thus, fitting the notches is not necessary.

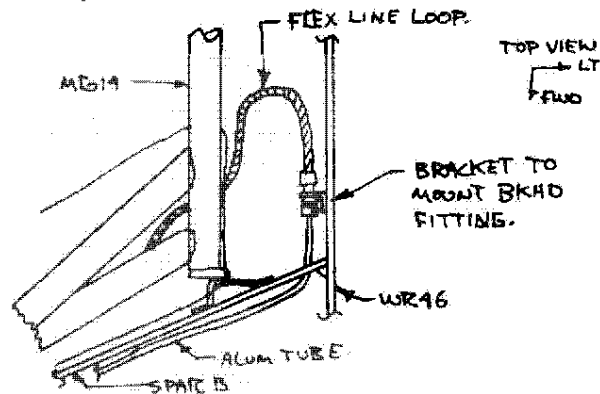
Landing gear motor assemblies - The accompanying photos show the assembly used by Pastor Bruce Jenkins. He hinged the motor (a Ford part number DOAZ-5723395-A) from the opposite side and supported it with a 'u' channel fit to the motor housing. It mounts firmly over the F30 fitting on the left side. The large plate is .125 alum. The large gear is a Boston ND64. He used a similar setup on the nose gear with a Boston ND30. These gears mesh directly with the Ford unit.

Ken Guscott went one step further and built a rigid box to house the large gear providing bearing support on both sides. He also uses a relatively complex system to provide lateral disengagement for emergency extension. While a bit on the complex and heavy side, his system is well engineered and should provide excellent operation. He has made up a full-size drawing of the system and will distribute it to other builders at a nominal cost for reproduction. He also has a drawing for his homebuilt nose gear designed around a surplus shock strut. His address: 12 Richards Road, Lynnfield, Mass. 01940.

VariViggen Hydraulic Brake Line Routing:

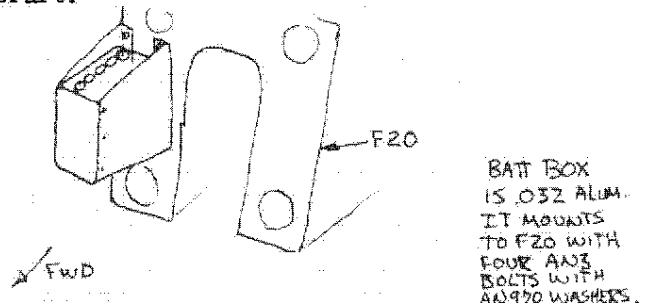
As shown on plans page 41, flexible line runs from the master cylinders to a bulkhead fitting through F31. Half hard (5052-1/2H) 1/4 O.D. aluminum line is run from this fitting inside the nosegear box through F32 aft along the side (inside) the tunnel. The aluminum line is routed aft to Spar B then outboard along the front face of Spar B to another bulkhead fitting mounted on WR46.

Route the aluminum line through Spar B at B.L.45 and W.L.3. From the WR46 fitting a flexible line is run aft about 6" then looped forward and down the shock strut to the brake. This leaves a loop of flex line outboard of the gear door cutout. Check for chafing of the brake lines during gear retraction.



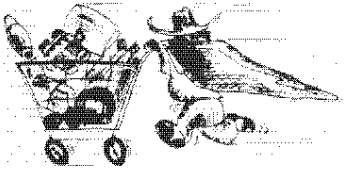
Asbestos fiber that we at one time recommended as an epoxy thickener has been identified as a possible health hazard if you breathe the dust. We no longer use it at RAF and don't recommend that you do either. As a non-toxic substitute, we recommend flocked cotton fiber (Gougeon Brothers 403 fiber).

The following sketch shows the battery location first used in N27VV. Note that the long dimension is positioned fore-aft to give room for the nose gear in the retracted position. I later moved the battery to between F70 and F91 after adding other equipment and finding that I didn't need the nose weight. Each builder should mount his battery after the first weighing to determine the optimum position for his aircraft.



VariViggen builders now total 440. Those of you with a VariViggen aircraft serial number will find enclosed with this newsletter, an update to the builders list.

If you can't find the 1/2" sq alum tube for the canopy, substitute 1/2x.049 2024 T3 or 6061 T6 round tube and use larger corner gussets and three extra rivets into the tube at the corners.



SHOPPING

We've heard reports that some suppliers have charged nearly twice the going or promised price on items which were ordered. We suggest that you get a price quote and a promised delivery before ordering anything from an unfamiliar source.

Ken Brock Mfg., 11852 Western Ave., Stanton, Ca. 90680 is manufacturing the light weight fuel cap assembly for the SP wings and they are available now. Ken has a beautiful illustrated catalog for \$1.00, unfortunately the fuel caps were too late to be included.

Bill Campbell, S/N 325, Bx 253, Phelan, Ca. 92371, phone 714 249-6218, is manufacturing the following parts for VariViggen builders: C8, C9, C12, C14, C16, C18, C19, C21, C15, EC3, EC5, E6, F29, F30, WF45, WA1, R11, AA3, SA4, SA5, SA8, SA9, SP5, PA5, PB2, PD2, AB2, AB3, AB4, AB8, AB12, AM2, RB2, RB3, PF2, PG2, EM2, NG11, NG16, NG17, NG19, NG21, MGB, MG9, MG10, MG20, MG22, MG24, MG29, and a 30-gallon fuel tank that fits in to the standard space. For prices and availability, send a stamped self-addressed envelope to Bill. Having these completed parts can really speed up your construction project.

Flight Test Assistance - We are planning to provide a pre-first flight inspection and initial flight test assistance service for our builders. This would involve us visiting your flight test area, giving your aircraft a very complete inspection and rigging check, prior to first flight and either flying your first flight or checking you out in N27VV to improve your proficiency for your first flight. Providing flight test assistance in expanding the flight envelope of your airplane would also be very beneficial in assuring flight safety. This service will only be provided to those who are building the airplane without major modifications from the plans, and flight envelope expansion on your aircraft will be limited to the envelope shown in the aircraft operating limitations, plans page 3. We will provide this service to the first three builders who complete their aircraft, free of charge except for transportation costs.

National Scientific Co., P.O. Box 901, Melbourne, Fl. 32901 is offering a kit for a capacitance fuel gauging system that promises to be lighter and more accurate than the float type gauge. The FG15 kit price is \$43.40.

Pastor Bruce Jenkins, S/N 177, Rt 1, Eagle, Mi. 48822 has two Continental O-200 B engines with accessories, currently undergoing chrome major for sale. These engines will be available for delivery in mid March. A certified check or money order for \$2150 will hold one for you.

Australian and New Zealand builders, who need a certified epoxy, contact Consolidated Chemicals LTD, New Zealand for information on their product "epiglue."

Gougeon Brothers, 706 Martin St., Bay City, Mi. 48706 has a hand cream for epoxy workers that enables you to clean up with soap and water only. You can order this barrier skin cream (ply no. 9) for \$2.60 a one-lb jar.

We've heard from several builders that G & J Aircraft and Industrial Metals, 1115 S. Sultana, Ontario, Ca. 91761 has good prices on hardware and metals.

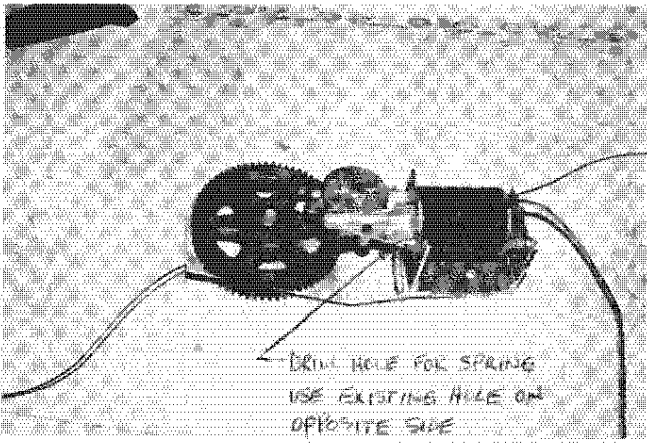
George Evans, 4102 Twining, Riverside, Ca. 92509 is pumping out welded assemblies for VariViggen builders. George has added the NG25/26/24/23/27 assembly with an adjustable NG27 to his stock and they are available now. George also has MG14's, MG32's, and EM1 weldments. You guys who have had trouble finding 1-1/4-in square tubing just write to George; he has 1000 ft of it fresh from the mill. George has also become a distributor for the Scott tailwheel ass'y and he's offering them below retail for VariViggen builders (\$186.). All of George's products that we've seen, have been of excellent quality and workmanship.

Vernon Williams, S/N 189, 4 Southmont Cir., Little Rock, Ark. 72209, reports that he still has a fuel tank for sale of the type he had at Oshkosh.

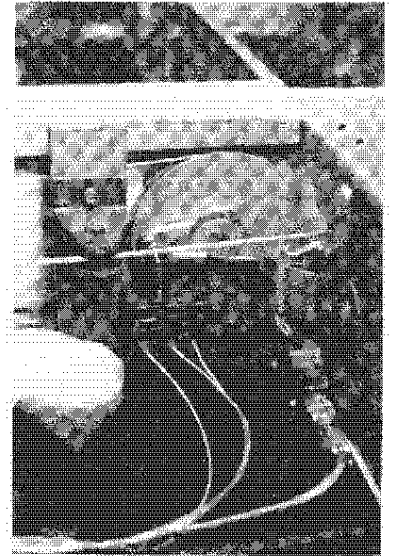
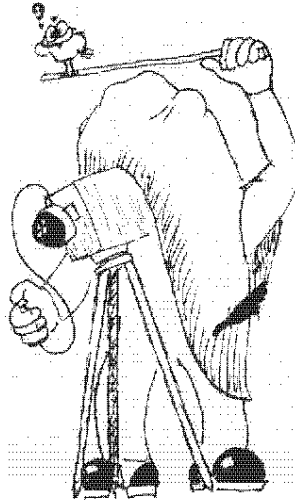
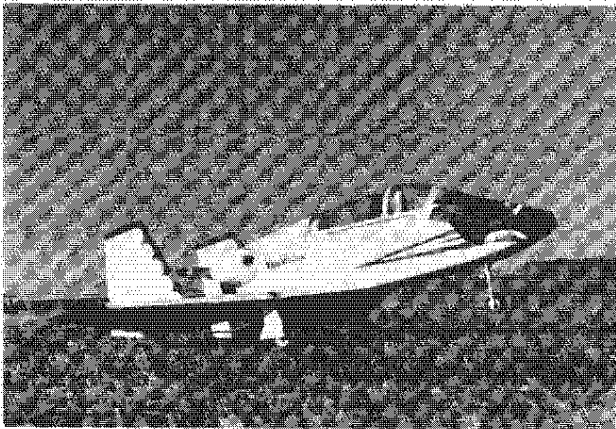
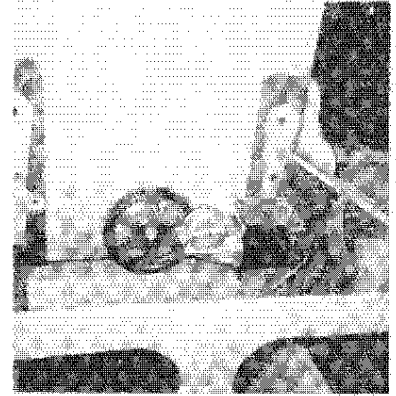
Those of you that are still having trouble locating materials, should get an Aircraft Spruce & Specialty catalog. This outfit provides excellent service and has a very complete "in stock" line of everything from plywood to hardware and instruments. One builder noted that their pre-cut VariViggen spruce kit (certified spruce) was cheaper than buying spruce from his local lumber yard. Their address is Bx 424, Fullerton, Ca. 92632. Catalog cost of \$2.00 is refundable on first order.

Jesse Wright, S/N 91, is in production with his canard kit, having delivered the first half-dozen or so. Jesse is also manufacturing a bulkhead kit. If you're interested, write directly to Jesse Wright, 7221 S. Colorado Ct., Littleton, Co. 80122. His canard kit is priced at \$116 including packing and shipping (in the U.S.A.). We listed Jesse's phone number incorrectly in newsletter 6; it is 303 771-5140, not 711-5140 as shown.

RAF is no longer handling the VariViggen bulkhead and rib kits. We do have a couple of sets here that we can sell at a discount to anyone who would like to pick them up at Mojave - we're no longer equipped to ship them. If you still want the bulkheads and ribs drawn on plywood, (not routed out like Jesse Wright's kit) you can order them from Aircraft Materials Co., 850 E. San Carlos Ave., San Carlos, Ca. 94070. Write them for price.



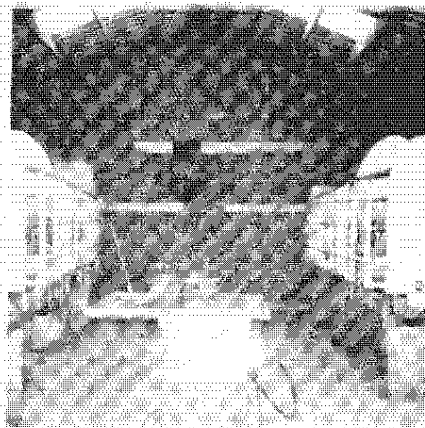
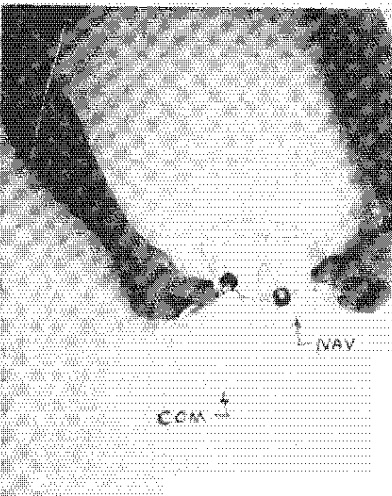
Bruce Jenkins' main-gear motor assembly with gearing.



VariViggen radio-controlled model built by Bob Constance, Tempe, Az.

Jim Cavis' maingear actuator assy.

Jim Cavis' fuselage gets a half-roll after skinning.



Bill Campbell's shop looks like an assembly line. He's building two!

New communications & navigation antennas from H. C. Communications.

