

# GLASAIR News

Newsletter No. 20

First Quarter, 1986

## GLASAIRS SWEEP SUN-N-FUN FLY-IN IN BEAUTY AND SPEED

Because of our involvement with the development of the new Glasair III and Glasair II aircraft, Stoddard-Hamilton was not able to send a representative to the recent Sun-n-Fun Fly-In in Lakeland, Florida. Glasairs were very well represented at Lakeland, however; Glasair builders won the top four places in the Sun 60 air race and also received multiple awards in the craftsmanship judging. The Sun 60 is an all out speed race of approximately 60 miles that is run from a standard start to a flying finish. Richard Porter averaged 240 mph to take first place in his RG, Charles Largay's RG finished in second place, Don Yoakley took third Place in his TD, and James Cline's

TD placed fourth.

Harry Rasmussen of Puyallup, Washington, won the Grand Champion Homebuilt award for his beautiful turbocharged Glasair RG. Among other features, Harry's airplane has electric flaps, leather upholstery, and beautiful pearlescent paint. Other craftsmanship award winners were: Paul Cloyd of Friendship, Wisconsin, won the Reserve Grand Champion award for his RG; William Bryan of Niceville, Florida, received the Best Low Wing award for his RG; J.C. Hanks of Vero Beach, Florida, was recognized with an Outstanding Workmanship award for his RG; and Jerry Gruber's RG won an award for the best Past Grand

Champion in attendance.

Another high point of the Fly-In was the Glasair Builder's dinner attended by 70 guests. The restaurant management actually had to turn away several late comers because the room was filled to capacity. An entertaining talk was given by Glasair builder, Don Conover.

Our "Congratulations!" to the award-winning Glasair builders at Sun-n-Fun and a special "Thank you" to all the other Glasair builders who represented us so well. All the beautiful and fast Glasairs being completed and flown by builders all across the country are our best advertising.

### INTRODUCING NEW GLASAIR II and GLASAIR III SERIES

Stoddard-Hamilton Aircraft, Inc. is pleased to announce the development of two new lines of homebuilt aircraft called the GLASAIR II and the GLASAIR III. The Glasair III model is an enlarged version of the popular Glasair RG and is designed to achieve the maximum performance currently available in a homebuilt aircraft — a sea level top speed of 300 mph. Also under development are the Glasair II TD, Glasair II FT, and Glasair II RG which are greatly improved aircraft to replace the present Glasair models.

The most exciting addition to the Glasair line is the Glasair III, designed to be unequalled in performance, construction simplicity, and price. The Glasair III has a longer, wider fuselage for increased baggage space, >payload capacity, and comfort, and will also stand slightly taller on its gear than the present retractable geared Glasair RG. It can be powered by either a 300 hp or 260 hp Lycom-

ing engine. With a 300 hp installation, projected top speed at sea level will be 300 mph, cruise speed (55% power at 12,000 ft.) will be 275 mph, and rate of climb 3750 fpm. With a stall speed of 65 mph, the new Glasair III will maintain the short field capability of the Glasair RG.

Also very exciting for those who want a high performance but simple aircraft are the new easy-to-build Glasair II TD, FT, and RG. These aircraft are powered by the same 160 and 180 hp engines as the present Glasair line and have been redesigned to provide a slightly larger cabin for increased comfort. Performance of the Glasair II series aircraft will be similar to that of the present Glasairs. The Glasair II RG will utilize a simpler and less expensive retractable landing gear system than used on the original Glasair RG.

Both the Glasair II series and the Glasair III will incorporate new components and construction techniques which will cut building time substantially from present Glasair models.

The Glasair II and III series airframe kits have been designed to cut builder time as much as possible while staying within the 51% owner-builder rule. Estimated building time of the Glasair II series has been reduced by 550 hours from existing models, while the estimated building time for the Glasair III has been reduced by 675 hours from that of the present Glasair RG.

Some of the time-saving features planned for the Glasair II and III series airframe kits are:

- A pre-molded canopy frame ready for installation,
- pre-molded, recessed flanges for the windshield, canopies, and cowling,
- scribe marks for all cut-outs,
- NACA style vents pre-molded into the fuselage,
- factory installed cowling inlet air scoop,
- pre-formed cowling flanges,
- pre-formed oil access door,

- factory installed cowling stiffeners,
- wing inspection cover doublers pre-molded,
- fuel sump with threaded insert pre-molded into the wing,
- integral wing tip flanges pre-molded to accommodate both standard wing tips and wing tip extensions.

The horizontal stabilizer and elevator on both the Glasair II and Glasair III have been redesigned for centerline hinging, are provided with prefabricated shear webs, and are torsionally stiffer than previous Glasair models. The elevator also features integral pre-molded counterweight arms. New, improved firewall materials will be standard on both aircraft.

All exterior airframe components for Glasair II and III series aircraft will be supplied with a primed surface ready to paint. Although painting the airplane may require slightly more work, a perfect final finish will be possible and the aircraft will be about 35 lbs. lighter than one with a gel coat finish.

To provide superior bird strike protection at the higher speeds expected from the Glasair III, a 1/2" windshield will be used. The extra windshield thickness will also make the cockpit significantly quieter than the standard 3/16" plexiglass.

Also necessary for the higher speeds of the Glasair III are the addition of more fiberglass laminates, integral longerons, and a lay-up schedule which provides a structurally stronger and torsionally stiffer fuselage. The wing has also been strengthened, is torsionally stiffer, and will hold 20 gallons more fuel than previous models.

The retractable landing gear of the Glasair III will be furnished with prefabricated main gear support structure boxes which will greatly simplify the landing gear installation and jiggling. In addition, a stainless steel nose gear box will be provided to both simplify installation and increase fire protection. The Glasair III will also feature a new hydraulic nose gear shimmy damper, redesigned longer struts to provide the necessary ground clearance, gear uplocks to provide positive gear door closure, and a manual wobble pump for emergency gear extension.

Under development by Stoddard-Hamilton Aircraft for over a year, the tooling for the Glasair II and Glasair III is near completion and work has been started on a prototype aircraft. We expect to fly the prototype Glasair III to Oshkosh '86 and the kit may now be ordered for delivery in September of 1986. Existing Glasair models can be ordered until June 30, 1986. Projected prices are Glasair II FT, \$14,950; Glasair II TD, \$14,550; Glasair II RG, \$18,500; and the Glasair III, \$28,950.

## GOOD READING

### LIGHT PLANE MAINTENANCE

Builders of experimental aircraft can apply for a repairman's certificate that allows them to perform all of the maintenance and repairs, including the required annual condition inspection, on the particular airplane they have built. Builders who are not experienced aircraft mechanics are wise to seek as much information as possible concerning the maintenance and repair of all the different systems on their airplanes. An excellent source of such maintenance information is a publication called Light Plane Maintenance.

Every issue of Light Plane Maintenance has articles that would be of interest to Glasair builders, such as: "Cleveland Brake Inspection and Relining," "Overhauling the Marvel-Schebler Aircraft Carburetor," "How to Service Wheel Bearings," "How to Clean Fuel Injector Nozzles," "Low Cost Plug Servicing: A Pilot's Guide," "A Beginner's Guide to Brake Bleeding," "How to Check Mag Timing: A pilot's Guide," "Instrument Installation and Removal Tips," "How to Detect (and Prevent) Valve Sticking," and many more. This magazine is perfect for the builder who wants to learn as much as possible about his airplane in order to maximize safety and minimize his reliance on outside help and advice.

To subscribe to Light Plane Maintenance, contact their subscription office at:

P.O. Box 923  
Farmingdale, NY 11737  
1-800-645-9559  
In NY: 1-800-732-9119

## RG OWNER'S MANUAL

The new Glasair RG Owner's Manual is now available. Besides providing specifications and performance data applicable to the RG model, the new manual is considerably expanded/over the old Glasair TD Owner's Manual. Included in the new manual are sections on operating limitations, emergency procedures, normal operating procedures, weight and balance, systems descriptions, maintenance, flight test procedures, and safety information. The new Glasair RG Owner's Manual costs \$20.00 and may be ordered by contacting our shipping department. The RG Owner's Manual is included with complete Glasair RG airframe kits; only retrofit RG builders need to purchase one.

## ENGINE OPERATOR'S MANUAL

We again recommend purchasing the Operator's Manual for the Lycoming engine installed in your Glasair. Besides operating instructions and performance tables, the manual has information concerning installation, maintenance, and troubleshooting. The engine Operator's Manuals may be ordered from:

Avco Lycoming Textron  
Williamsport Division  
652 Oliver Street  
Williamsport, PA 17701  
ATTN: Publications

The manual for the O-320 and 10-320 series engines is part number 60297-16 and for the O-360 and IO-360 series engines is part number 60297-12. The manuals are still just \$5.00 each.

## OSHKOSH BUILDER'S BANQUET

We are organizing a banquet for Glasair builders during the 1986 EAA International Fly-In at Oshkosh again this year. This year the banquet will be held at The Pioneer Inn & Marina, 1000 Pioneer Drive, in Oshkosh, where we have reserved a room for 130 to 150 people. The social hour is planned for 6:30 p.m. with dinner to follow. We are still working out menu details and prices, but there will be a choice of entrees and the price should be close to previous banquets. Builders should call Stoddard-Hamilton if they wish to attend, so we can arrange the proper number of meals.

## BUILDER HINTS

### VACUUM BAGGING TECHNIQUES

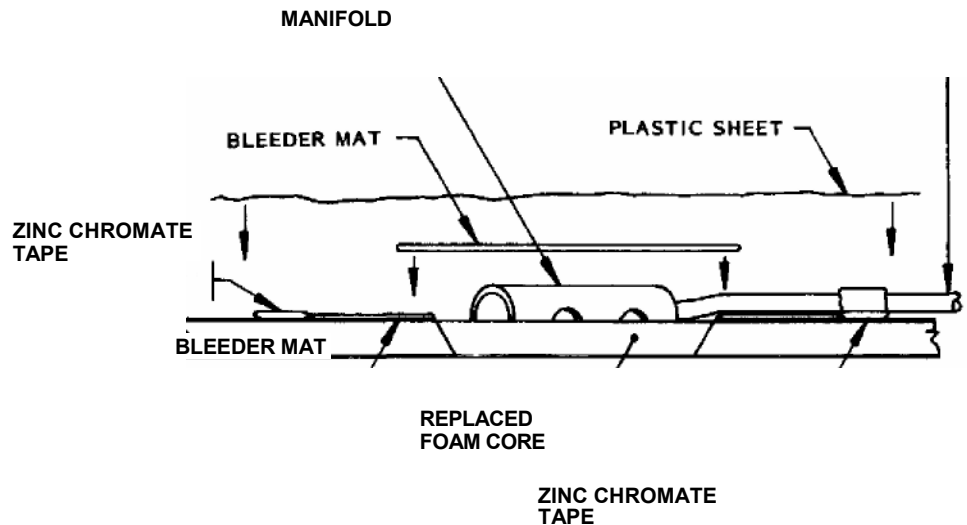
In the firewall addendum recently sent out, one of the techniques suggested for bonding the replacement Rohacell foam into the firewall bulkhead is to use a vacuum bag, as illustrated here. This technique could also be used for installing the high density foam for the wing walk reinforcement area.

Plastic sheeting, sealed to the surrounding structure with zinc chromate caulking tape, is used to hold the vacuum. If the surface being sealed to is smooth, masking tape will work as well as the zinc chromate tape. The bleeder mat is a porous material that helps assure that all of the air can work its way out from under the plastic sheet to the vacuum hose. We use 2" wide bleeder mat around the perimeter of the foam core and also a small piece over the manifold (about two inches larger all around than the manifold). The manifold is a length of 3/4" to 1" diameter plastic tubing

cut in half lengthwise with some notches cut along the sides, as shown. The purpose of the manifold is to keep the plastic sheet from closing off the end of the vacuum line. Use zinc chromate caulking tape to seal around the vacuum line where it passes under the edge of the plastic sheet and take extra care that this area is sealed well.

It is best to rent or borrow a vacuum pump for this procedure. If you use a vacuum cleaner to pull the vacuum allow for some air flow into the connection where the tube from the vacuum bag mates to the vacuum cleaner hose; this will provide cooling air to prevent damage to the vacuum cleaner motor.

### VACUUM HOSE



### ELECTRIC FLAPS

One of our builders used a Cessna flap motor to convert his Glasair to electric flaps. Illustrated here is the general concept of the installation; builders who want to implement this system will have to work out all the details themselves. Stoddard-Hamilton cannot recommend a modification it has not tested.

The flap actuator arm is installed parallel to the flap handle rather than at the 15° angle specified in the Instruction Manuals, although this is probably not an absolute requirement. The flap handle was cut off as shown and an insert fabricated with two arms spaced to accommodate a rod end bearing. The center of the rod end is located 6" from the torque tube pivot point.

An actuator rod using the same 1" diameter aluminum tubing as used in the Glasair elevator push rod was fabricated to connect the motor to the flap lever. The two bosses on the end of the flap motor jack screw push rod were ground off and mated to the flap actuator linkage using a sleeve and two bolts. The electric flap system is arranged such that tension loads only are placed on the flap actuator linkage. The limit switches on the flap motor must be modified so that the motor does not force the flaps beyond the limits of their travel.

Two ribs were fabricated on the aft side of the seat back to mount the motor with extra bracing to the upper wing skin and to the control tunnel attach plates. The mounting system must be sturdy enough to support the

pull of the motor when flaps are extended and also to keep the motor in place during the maximum expected G-loading.

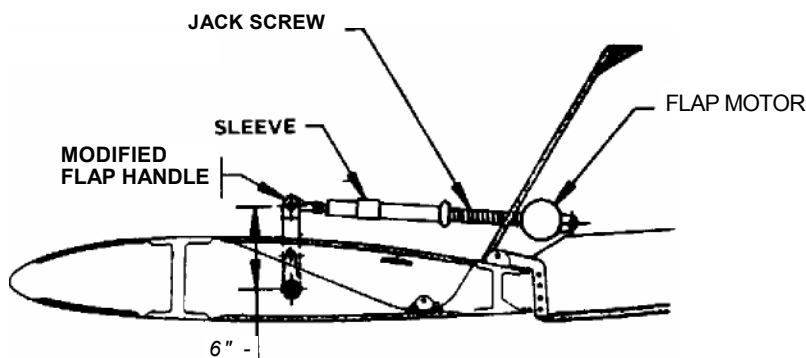
Another builder suggested installing a positive stop for the flap motor jackscrew to prevent damage to the airframe in case the limit switches failed.

### BRAKE LINING BREAK-IN

The brake linings should be properly broken in to achieve their maximum life. If the linings are not broken in first, a single hard stop can glaze the lining material which reduces the coefficient of friction and causes more rapid wear.

To break-in new organic linings (as supplied on the Cleveland brakes for the Glasair), taxi in a straight-line at 25 to 40 mph and then brake to a smooth stop using light pedal effort. Allow the brakes to cool for a minute and then repeat the entire cycle (taxi, brake, cool down) a minimum of five times. Avoid hard brake application until this procedure has been completed.

This break-in procedure cures the resins in the organic linings before glazing can occur, which results in better performing, more durable brake linings.



## NOTICES

### UPHOLSTERY PACKAGES

Due to the many variations in Glasair Construction, Stoddard-Hamilton has decided to discontinue direct sales of upholstery packages. We found that, to maintain a consistent quality with the many variations, our price would have to be significantly higher. Rather than raising the price, we have decided to have Glasair builders deal directly with the shop that was producing our interior packages. Please call Stoddard-Hamilton for further information.

### SKYWAY SERVICES

Skyway Services Co., of Renton, Washington, has announced they are discontinuing their aircraft parts business. All existing orders will be filled, but new orders will not be accepted. Howard and Ken Slauson asked us to pass along their best wishes for success and enjoyment to each Glasair builder using their kits, and also to convey their appreciation for the support and patronage.

## FLYING GLASAIRS

Since the last newsletter, Don Wall of Maitland, Florida, Charles Largay of Miami, Florida, and Reg Jaworski of Ft. Lauderdale, Florida, have flown their Glasair RGs; Don Droscher of Port Townsend, Washington, and Gerald Collins of Lilburn, Georgia, have flown their Glasair TDs; and Bruce Williams of Baton Rouge, Louisiana, has flown his Glasair FT. These airplanes make 107 Glasairs that we know have flown.

In Newsletter no. 14 (3rd quarter, 1984) we erroneously reported that Neil Fuller had flown his Glasair TD. At that time, Neil had notified us that the airplane was ready to fly, but he then suffered a heart attack and was unable to fly. Neil now reports that he has regained his health, had his medical reinstated, and has just completed his first flight.

## AIR FILTER INSTALLATION

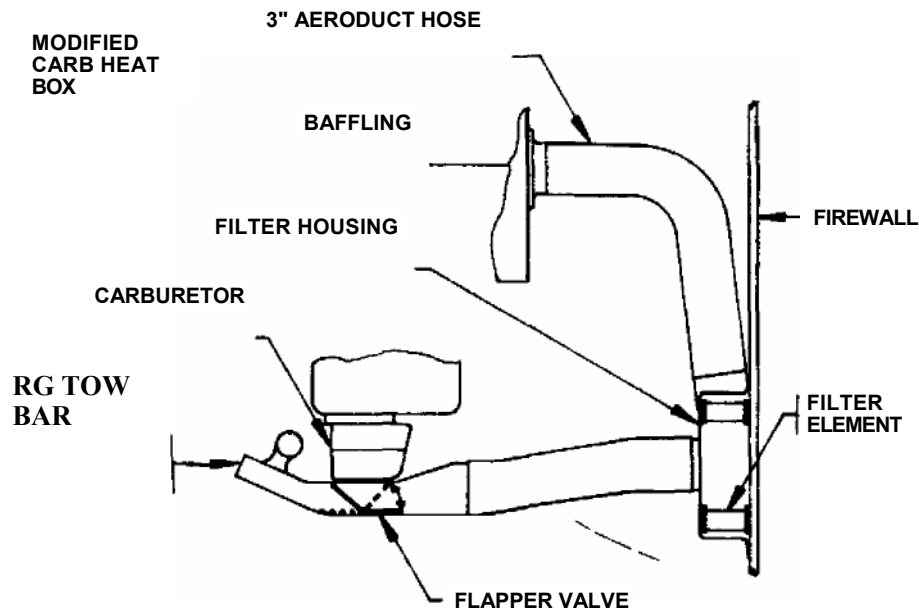
Shown here is a schematic of a carbureted engine air filter system used by one of our builders. The round, automotive filter element is installed in a fiberglass housing mounted to the firewall. Inlet air is taken from the aft engine baffle. An extra flapper valve that can select between ram and filtered air is installed in the carb box directly under the carburetor. With this arrangement, the filter must be shut off to select carb heat. The builder who suggested this filter system reports that the rpm drops about a needle width when the filtered air is selected.

The filter housing was laid up in the bottom of a 3 gallon resin bucket, released, trimmed, and then turned over onto a sheet of waxed glass for application of the flange all around. The 3" tubes were laminated by

wrapping mylar tape over cardboard shipping tubes and the flange on the rear of the baffle was laid up over a foam mold.

Stoddard-Hamilton wants to caution builders about the installation of air filter systems. The filter housing and tubes must be properly designed to avoid air separation which could cause improper fuel mixture. Stoddard-Hamilton is working on an air filter option which will be thoroughly tested before being made available.

For builders who design their own filter system, the filter housing should be sufficiently large and the flapper plate sufficiently thick to avoid problems. The installation detailed above cannot be recommended because Stoddard-Hamilton has not tested it, however.

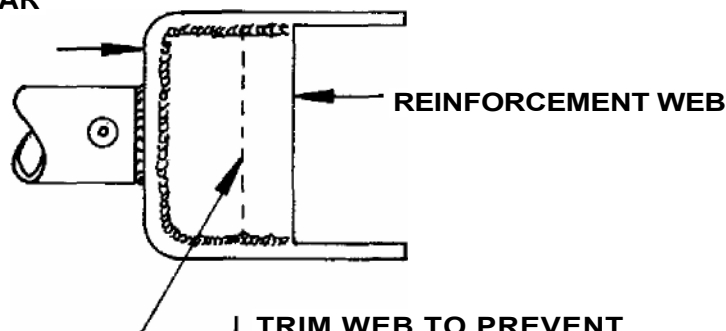


### MODIFICATION

In the last newsletter, we mentioned that if the handle on the RG tow bar is lifted too high during use, the reinforcement web between the two attach arms can contact and damage

the lower nose gear scissor. We recommend trimming the reinforcement web back, as shown, to prevent damage. We have remedied this problem on future tow bars by moving the web to the lower side of the fork.

### TOW BAR



TRIM WEB TO PREVENT CONTACT WITH SCISSOR

## SAFETY NOTE

One of our builders recently reported a wheel fire caused by an overheated brake while taxi testing his (new TD). He taxied a distance holding right brake in a cross wind and his first indication of trouble was a sudden failure of the right brake caused by the brake line burning through. The brake failure was followed by a 720° ground loop. The pilot got out of the airplane and pushed it off the runway before noticing the fire which, by that time, fully involved the lower gear leg. Luckily he had a fire extinguisher on board or it is likely he would have lost the whole airplane. The damage was severe enough to completely delaminate the lower gear strut.

As a result of this builder's experience, we recommend leaving off the wheel pants on fixed gear models, or gear door No. 2 on the RG, to provide optimum brake cooling while conducting taxi tests. Also, allow plenty of cooling off time for the brakes between taxi runs and be especially careful if you taxi long distances while holding brakes.

## 'ROUTING WIRING THROUGH TIP TANKS

One builder recommends using 1-1/4" diameter PVC pipe, completely sealed with fiberglass laminates to route the wiring for the navigation lights through the wing tip extension fuel tanks.

## MARKING WHEEL PANT AXLE SCREW LOCATION

To mark the position of the wheel pant axle attach screw, one of our builders inserted a felt tip pen into the axle. He then positioned the wheel pant, reached up inside the wheel pant with two fingers, and pulled the pen out against the inside of the wheel pant.

## RG NOSE WHEEL BALANCING

We are told that if the bearings are removed, the RG nose wheel will fit on an automotive spin balancer. A perfect dynamic balance of the wheel may help eliminate the nose gear shimmy that has been experienced on some Glasairs. Use the self-adhesive type wheel weights available from motorcycle shops.

## EXCESSIVE ENGINE COOLING

One of our midwestern builders reports that during the winter his engine has been running too cool, and that even during the warmer summer months his oil temperature takes a long time to come up into the green. To overcome this problem, he has fabricated some removable plates that block off approximately half the cooling inlet area, allowing his engine to come up to the normal temperature range when operated in cool weather. He has used these blocking plates in outside air temperatures up to about 50°F without encountering overheating, even during climb-out (be sure to verify the accuracy of your temperature gauges if you are running your engine near the upper or lower temperature limits).

## RG GEAR STRUT TOUCH-UP PAINT

Dupont recommends acrylic lacquer for use as a touch-up over the polyurethane paint on the RG oleo struts. For the best color match, use 1971 to 1983 Chevy white, number 5338 code II, available from an automotive paint store for about \$7.00 per pint.

## GLASAIR FLY/IN PICNIC

Preparations are continuing for the Third Annual Glasair Fly/In Picnic, scheduled for the weekend of August 23 and 24, 1986, at our facility located on the Arlington, Washington Airport. We hosted about 150 guests at last year's gathering, and 13 Glasairs were flown to Arlington by their builders.

The price is \$40.00 per person which includes the Saturday afternoon barbecue, Sunday morning brunch, and other items.

We are working with local motels to arrange accommodations similar to previous years and will make more information available as plans are firm-ed up.

We would appreciate hearing from you if you plan to attend the picnic this year. There is no need to send payment at this time.

## BONDING COWLING FLANGES

A few builders have reported laminates failing to adhere to the inside of the cowling. One builder reports good results using an old hunting knife to scrape the existing laminates on the cowling to provide a rough surface for the secondary laminates to bond to. The original laminates must be roughened sufficiently to expose the fibers of the reinforcement fiberglass. Wash the surface to be scraped with acetone before scraping.

## MORE ON UPGRADING FROM 150 to 160 Hp

In the last issue of Glasair News, we reported that it is necessary to use high compression valves when upgrading an engine from 150 hp to 160 hp. To assure those builders who might have completed this engine upgrade without installing the high compression valves, the regular valves can be used as long as an inspection procedure is completed periodically, as described in Lycoming Service Bulletin 404. This service bulletin specifies the inspection interval and the wear limits for the valves, which must be replaced if the wear is found to exceed tolerances.

Name: \_\_\_\_\_

Total in party: \_\_\_\_\_

Do you need motel reservations? Yes No

How many rooms? \_\_\_\_\_

How many beds per room? \_\_\_\_\_

Which nights will you stay?

Fri. Sat. Sun. Will you be

camping? Yes No How will you arrive?

Glasair

Private Plane

Airlines

Automobile

Mail to: **Glasair Picnic** 18701  
- 58th Ave. N.E. Arlington,  
WA 98223