PHOENIX 8

GENERAL INSTRUCTIONS

The Phoenix 8 features an epoxy glass fuselage. Only epoxy glues should be used to attach parts to the fuselage; the surfaces to be glued should be thoroughly sanded to remove glaze. Hobbypoxy adhesives are recommended. Thrust line markings are imprinted in the fuselage at the nose, fwd of wing and at rear of stab fillet as an aid in the alignment of major components.

A polyester body filler such as Snow White, Black Magic, etc. is recommended for blending in fillets and filling in surface blemishes. This filler may be applied directly to well sanded epoxy or over the top of primer. A finger dipped in lacquer thinner will smooth out the filler and eliminate excessive sanding. Wing and tail sheeting may be applied with any contact cement that does not attack foam, or by applying a thin coat of Hobbypoxy formula 2 glue to the sheeting. Use epoxy sparingly! On sheeting or laminations, apply a small amount of epoxy and squeegee with a scrap of balsa. NOTE: A flat work surface is essential to avoid twisting the wing panels when applying sheeting.

The Phoenix 8 is designed to accept either a conventional stab or a flying stab installation. The conventional installation is recommended, however those desiring a removable stab to reduce shipping container size may wish to experiment with the flying stab. Cutouts in the fuselage may be made with a Dremel grinder using a fine burr or with an X-acto hot knife.

The fuselage is designed to fair into a 2 1/4" spinner.

SHEETING WING

Sand wing cores lightly but thoroughly. Glue balsa to trailing edge and shape as indicated on plans. Glue up sufficient 1/16" balsa sheet to cover wing panel. Using foam contact adhesive or a thin coat of Hobbypoxy formula 2, glue sheeting to cores, aligning sheeting with the trailing edge of core. Position cores back in foam blocks, place on a flat surface, and apply approximately 50-75 lbs of weight evenly over top of block. Allow to dry overnight. Trim and sand sheeting flush with the cores; glue leading edge and tip blocks in place and shape as indicated.

JOINING WING

The wing cores are precut with the proper dihedral and it is recommended that the bottom foam blocks be used as an alignment jig when joining the wing panels. Join wing halves using 5 minute epoxy; insure wing alignment is maintained and dihedral is at the max camber of the wing tip juncture. NOTE: Be absolutely certain that wing chord line is parallel with work bench to assure proper dihedral with the swept wing. After joining wing panels, cut flat on center leading edge of wing as indicated on plans to insure proper alignment of wing to fuselage.

INSTALLING BELLY PAN AND WING

Align wing on fuselage; insure wing tips are equal distance from fuselage centerline and equal distance from the bottom of rudder hinge line. Place reference marks on wing and fuselage to establish alignment later. Trim belly pan as necessary, drill for 10-24 bolts at recesses and temporarily position belly pan on wing. Mark bolt locations on wing. Remove wing and belly pan and drill holes in wing for dowel. NOTE: A length of sharpened thin wall brass tubing may be used to cut holes for dowels. Reinforce wing center section (top and bottom) with a 3" wide strip of fiberglass cloth and epoxy. If wing is to be finished with polyester sanding resin, use resin in place of epoxy. CAUTION: Polyester resin will attack foam when in direct contact. When fiberglass has set, cut open dowel holes and trial fit dowels in wing. Dowels should be clearance drilled for a 10-24 bolt at this time. With wing aligned on fuselage, epoxy belly pan in place. Remove wing and epoxy dowels in wing as indicated on plans. Insure dowels are epoxied to belly pan at the

bolt recesses. When dry, trim and sand dowel flush with the top side of wing. Install plywood wing saddle blocks in fuselage as indicated on plans. Place wing on fuselage and recheck alignment. Drill through belly pan and wing dowels into saddle blocks. Install blind nuts or reinforce plywood with hardwood blocks and drill and tap for 10-24 bolt. Rear of belly pan should be closed in with balsa to prevent oil accumulation in the belly pan.

ENGINE INSTALLATION

Before installing firewall, locate and drill holes for nose gear unit. Blind nuts may be installed and recessed to clear motor mount at this time. Drill and tap engine mount as required for your engine. Cut out fuselage as necessary to install engine. Place the engine mount inside the fuselage and install engine on mount. Tack glue a 1/16" balsa spacer to the back of the spinner plate; spacer should be the same diameter as the spinner. Install prop and spinner on the engine. With the fuselage standing on its tail and the balsa spacer flat against the nose of the fuselage, securely tape the spinner and engine unit in the desired position. Tack glue plywood to engine mount with 5 minute epoxy. When dry, glue to fuselage at several locations with 5 minute epoxy. Recheck engine alignment is 0/0 degrees. Firewall may now be permanently glued in place with filled epoxy or formula 2 glue and glass cloth. When glue is dry, remove engine and mark engine mount bolt hole locations on firewall. Break mount loose and drill for 6-32 blind nuts. Exposed wood in engine compartment should be sealed with a thin coat of Hobbypoxy formula 2 glue. Engine installation may now be completed.

HORZ STAB CONSTRUCTION

Sand cores and prepare 1/16" balsa sheeting. Trim 3/16" from trailing edge of foam core so sheeting will overlap. Glue sheeting to cores and weight in blocks overnight: insure balsa sheeting at trailing edge is glued and in firm contact. Cut out elevator with jig saw or razor blade and straight edge, and install balsa framing as indicated. Be sure to allow for thickness of framing when cutting out elevator. Install leading edge and tips; carve and sand to shape. Glue stab halves together with epoxy.

HORZ STAB INSTALLATION

Cut out fuselage stab fillets as necessary to allow installation of stab. Check stab alignment by measuring to insure stab is centered in fuselage and stab tips are equal distance from wing tips; insure stab is aligned with wing and shim in place with balsa scraps. NOTE: Care should be taken to insure vertical fin is straight before gluing stab in place. Secure stab with 5 minute epoxy and blend fillet line into stab with body filler. Hinge elevator as indicated on plans. Elevator horn should be installed at indicated location to allow clearance for rudder Elevator horn may be fabricated from dowel and 3/32" music wire and epoxied in place as indicated on plans.

FLYING STAB (Optional)

Prepare stab as for conventional installation. Cut out center section of stab as indicated and cap stab root with balsa. Install stab pivot mechanism (available from PAC). NOTE: Stab fillet is marked at pivot location (25% mean aerodynamic chord).

CONTROL SURFACES

Shape ailerons as indicated from balsa. Glue up rudder from two pieces of ½"x 3" balsa and shape as indicated. Leave trailing edge of control surfaces approximately 1/16" thick and round off with sandpaper.

NOSE LANDING GEAR

Cut out nose wheel well as required. NOTE: should be marked, drilled and blind nuts installed before being glued in place: See engine installation instructions for details. Wheel well should be reinforced with spruce or balsa to prevent distortion when fuselage is resting in cradle.

MAIN GEAR

Make up retract gear mounting block as per plans. Cut out foam so block will be flush with wing skin and glue in place with epoxy. Install retract unit and mark and cut out foam as necessary to house strut and wheel. Seal exposed foam with a thin coat of epoxy. NOTE: Commercial cutters are available for cutting foam, however a home made cutter can be improvised from a soldering gun by using copper wire shaped as required in place of the normal tip. Landing gear struts should be fabricated to allow at least prop clearance with the plane in a level or slightly positive attitude.

FINISHING

Lightly sand fuselage to remove gloss. Fill and sand seam where necessary. The fuselage should be thoroughly cleaned with thinner before painting. Epoxy primers and paints are recommended. Polyester sanding resin is recommended for sealing balsa surfaces. On the wing, the resin should be used in conjunction with light weight glass cloth for strength. Use resin sparingly and sand well to avoid excess weight. CAUTION: Polyester resin will not cure over spackling paste and over most epoxies. Five minute epoxy is an exception to this and it may be used as a primer over other products that will not permit the polyester to cure.

Preparation For Flying

Check the center of gravity as indicated on the plans. This is a good starting point from which to adjust to your personal preference. Check lateral balance. This may be done by holding the plane with one hand on the spinner and the other hand supporting the fuselage at the rudder hinge line. Add weight to wing tip as necessary to achieve balance. The control surfaces should fit tightly to insure minimal air flow or “leakage” through the hinge gap. Leakage at the ailerons can result in difficult trim problems and possibly undesirable rolling characteristics. An easy way to insure an airtight seal is to apply tape or to the bottom of the ailerons as indicated on the plans.