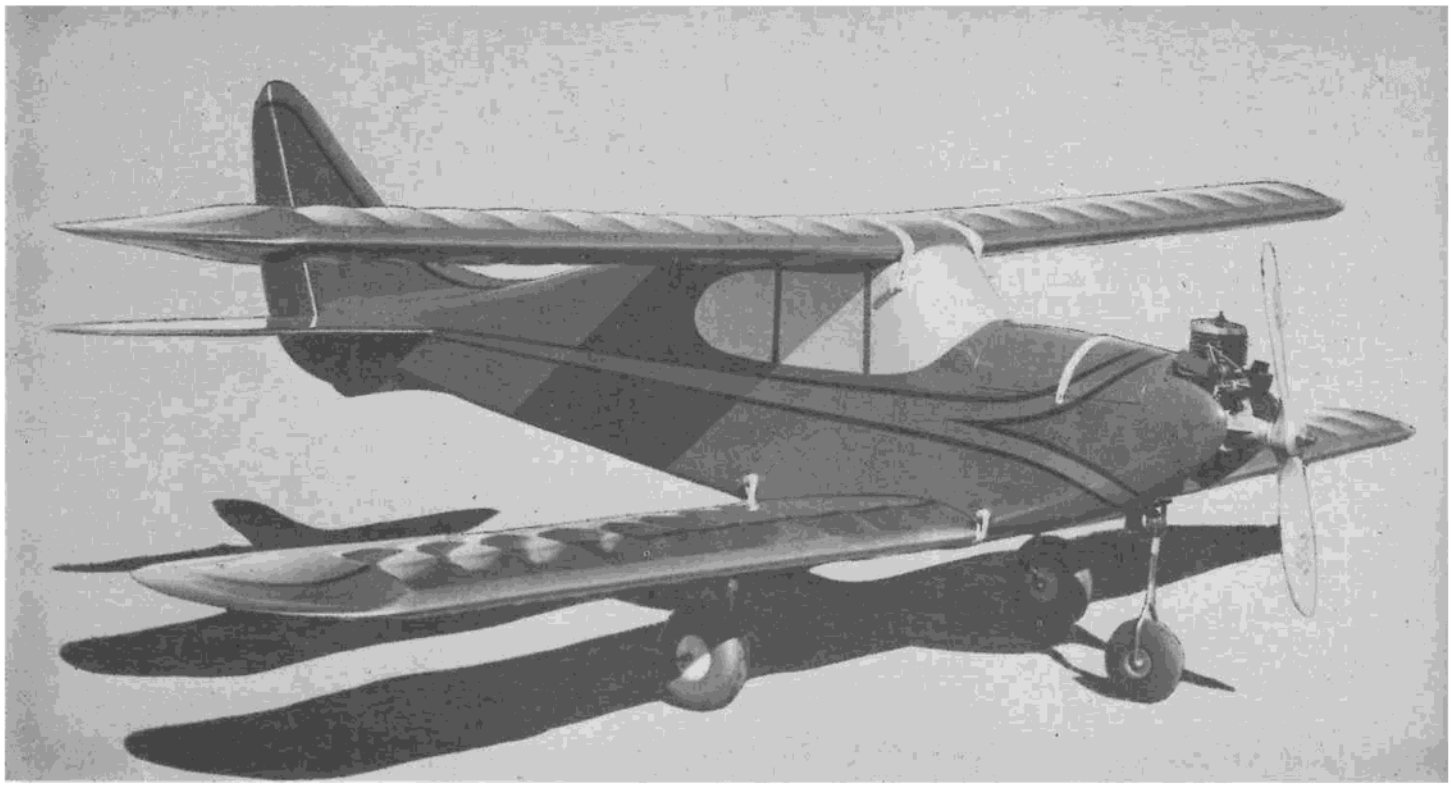

Creative design and proven performance make an unbeatable combination for bipe addicts.

Phil Kraft's

STAGGER-BI

Beautiful Multi-Bipe for Proportional or Reeds

Full Size Timely Plan Available

Stagger-Bi and friend. Note new proportional transmitter.

▶ For many of us, the biplane evokes a feeling of nostalgia for the early days of aviation. Although certainly obsolete for full-scale use, the biplane still has a definite place as a radio-controlled stunt aircraft. It has the advantages of compactness, light weight, and extreme maneuverability. In addition, we can absolutely guarantee that when flying the Stagger-Bi, the spectators will pay little attention to any other model on the field!

The first Stagger-Bi was flown in the Summer of 1959. It was a success from the beginning: very fast, highly maneuverable, and exceptionally spectacular in the pattern. Two years ago, a cleaned-up version was built, adding the tricycle gear. This is the ship shown in the picture.

For the technically minded, the theoretical advantage to negative stagger over positive stagger is that the decalage set-up of the wings is so arranged

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that the forward, or bottom wing, stalls first. This gives better control at very low speeds due to the fact that the rear, or upper wing, is seldom in a stall condition. Also, the forward wing provides an air cushion during landings which makes for smooth touch-downs.

The plans show a considerable amount of modification in structure over that used in the original Stagger-Bi. The only drawback to the original was the tendency for the surfaces to develop warps due to the open-frame type of construction. Since the ship is extreme - ly fast, this made it difficult to trim for all maneuvers during the initial flights. For this reason, the plans show a conventional planked type of construction. It is absolutely essential that accuracy be observed in order to avoid warps.

Due to it's speed and extreme maneuverability, the Stagger-Bi is definitely not recommended for the less experienced. For this reason, and since the plans are well-detailed and self-explanatory, only a few construction notes will be given.

Begin fuselage construction by cutting the 1/16" ply doublers and 3/32" sheet sides to shape. Be sure to cut notches in the doublers for bulkheads F2, F3, F4, plus servo mounts and tube for rudder bellcrank. Glue the doublers to the fuselage sides. Glue the 1/4" square corner longerons to each side and the 1/4" x 1/8" uprights to the sides and stab doubler. See the rudder bellcrank detail and assemble accordingly. Glue F1, F2, F3, F4, nose wheel mount, servo mounts and rudder bellcrank assembly in place. Install the 1/4" sheet wing doublers and the 1/2" sheet nose doublers to one side. Glue on other fuselage side and let dry. Tack glue cowl and hatch blocks in place. Carve blocks roughly to shape, then remove and hollow out. Note that each end of the hatch is covered with 1/16" ply. Glue cowl block permanently in place. Cement rear of fuselage together and install cross pieces. Install nosewheel, servos, trim bar, pushrods, throttle linkage, etc. Plank top and bottom of fuselage. Note that bottom planking between F2 and F3 is 1/8" sheet, while 1/2" sheet hollowed to clear the nosewheel is used between F1 and F2.

Engine selection is entirely up to the builder. The ship pictured has had virtually every popular type of RC engine installed--a hot Fox 59 provided the most spectacular performance. The ship is set up for a radially mounted engine which makes it possible to quickly interchange the power unit. It is inconceivable why most RC designers use the archaic beam mount arrangement. Beam mounts are heavier, tend to transmit vibration, soak up oil, break - up in a crash, and are very difficult to modify in order to accept a variety of engines. In fact, we cannot think of one good feature for beam mounts except that in some instances they make the engine easier to cowl-in.

Since engine mounting plates are not usually standard, it is necessary to make one to suit your particular engine. These are merely sawed from 1/8" thick aluminum and drilled to match the four crankcase cover retaining bolts. In addition, drill 3 holes for the mounting bolts. We suggest you use #6-32 nuts & bolts to mount the engine to the firewall, and also double-nut the bolts to avoid their loosening from vibration. After this is accomplished, remove the engine and all equipment The fuselage is now ready for silking and doping.

The wing should offer no particular problems, and can be built in two halves. Cut the wing spars and assemble over the plans. Secure the front spar in place, then block the rear spar and fasten in place. Lift from the jig or board and sheet the leading and trailing edges on the bottom side. Note that the Top Flite landing gear mount is to be sheeted over and a slot cut for the gear. Build the other wing half in the same manner. Install center ribs, landing gear mount, servo rails, bellcrank platform and sheet center sections. Leave the bottom of the wing center section (top wing) open for servo mounting. Build the ailerons separately. Cover the top center of the top wing and install ailerons. Complete the aileron linkage and cover bottom of top wing.

The stabilizer is self - explanatory. Cover the top with 1/16" sheet before removing from plan. Turn over and sheet the bottom.

The elevator is cut and shaped from 1/4" medium balsa and joined with 3/16" I. D. aluminum tubing over a section of 3/16" dowel. Secure the tubing and - dowel hinge to the elevator with pinking tape.

The fin and rudder are cut to outlines shown. Do not omit the stiffener in the fin.

The original Stagger-Bi had several coats of red butyrate dope with gold and black trim. If light balsa was used throughout, the finished weight should be between 5 1/4 and 5 3/4 pounds. Flight trimming is quite conventional, however it is important that the decalage set - up of the wings be very close to that shown on the plans. The ship is not overly -sensitive to CG placement, but it is desirable to come as close as possible to the position shown.

Some readers will be interested in the contest potential of this particular design. It has been successfully flown for hundreds of flights without incident, using both reeds and proportional control, and we feel that, properly constructed, the Stagger-Bi has a definite contest potential. The ship does all maneuvers well. It is, however, very fast, which makes it somewhat less of a contest aircraft by the current standards of the larger and slower ships seen in today's meets.

We think you'll like the Stagger-Bi----in the hands of a capable pilot, it is always the star of the show!