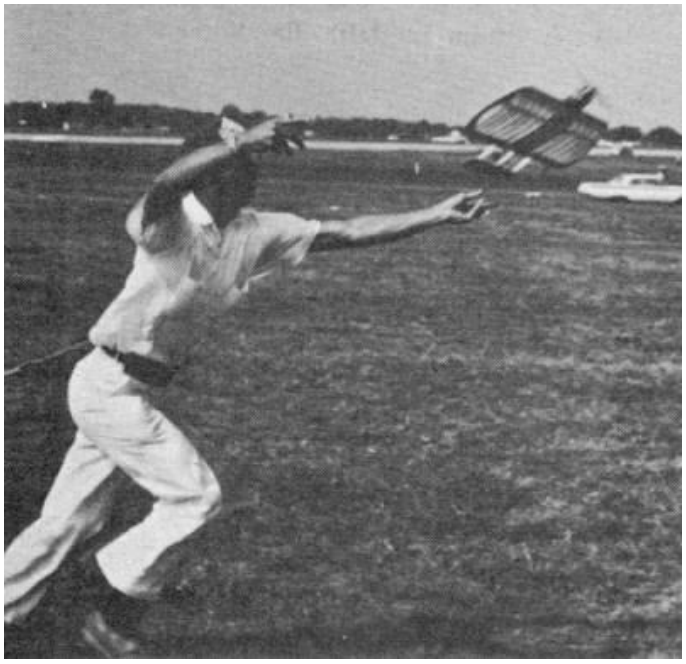
The Year 1960

The 1960 National Combat Champion was Bill Carpenter from Winchester California. Bill flew an airplane of his own design called the “Swoop”. He used a Johnson Combat 35 for power. Luis Carpenter from Mexico City, Mexico finished second. He also used an airplane of his own design named “El Kinto”, it was powered by a Torp 35. Neil Welch from Lubbock, Texas finished in third place.

A later version of Bill Carpenter’s “Swoop” was kitted by Sterling. It was called the “Super Swoop”

Right: Bill Carpenterôs Super Swoop being launched at the 1962 Nats.

Below: photo of the Super Swoop from the Sterling kit box.



American Champion 1960 Open Class Combat Winner

"SWOOP"

■ The "Swoop" was designed to look and fly a bit differently, compared to the usual run of Control Line Combat Contest jobs. It sports a "flying tail" and unusually shaped wing tips. Due to these features and a fairly thick airfail, "Swoop" turns very tight without losing speed. Interlocking construction makes the model very strong, and as a result, high-speed crashes on grass or loose earth do not always mean an end of the day's flying.

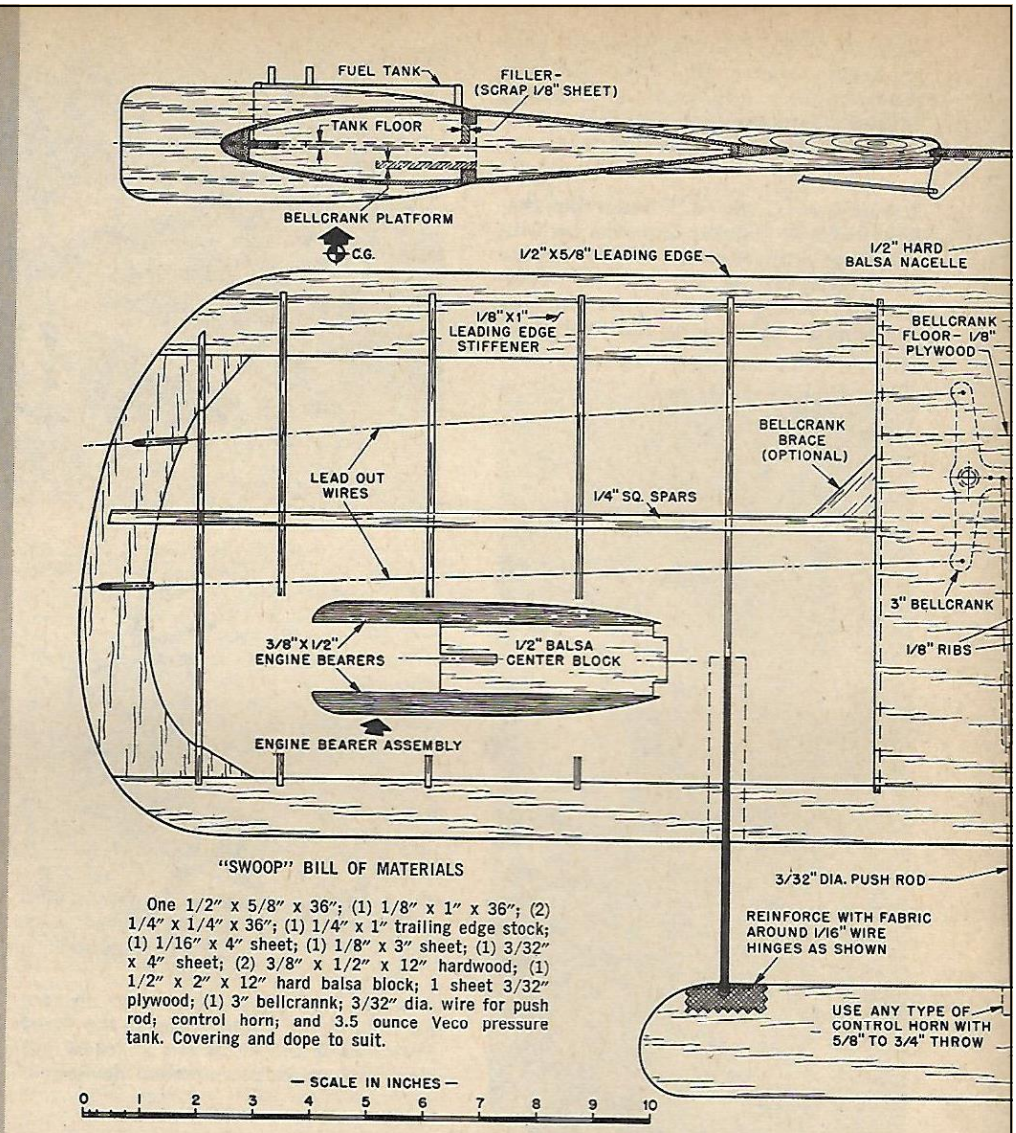
Swoop dispenses with the usual wing tip weight and engine offset, yet handdles very well in strong winds. This is very important, as it is generally windy in the afternoon at most contests — Swoop is equally facile at upwind or downwind maneuvers. When you fly one you'll see the proof of this.

Swoop has a wing span of 34 inches, chord of 10 inches, so after deducting lost area due to tip curves, we get 325 sq. inches of wing area. Weight has run between 17 and 19 ounces in previous Swoops, accounting for the tight maneuvers. In my winning model, there is a Johnson "35" up front, but any relatively "hot" 29 or 35 will yank Swoop around just fine. Before you start construction, look the plans over carefully to be sure you understand the procedures and construction techniques.

Construction is started by cutting out the various ribs. Notch the leading edge stiffener and the leading edge itself. This can be done easily by taping 3 hacksaw blades together and sawing at the proper point in the L.E. or T.E. Make a trial cut in scrap stock first, just in case you need to shim out the thickness to match the rib stock that will go into the notches. On the stiffener, you can judge the ½" slot depth easily, as most hacksaw blades are ½" wide. So saw the blade depth, and that is it.

A handy hint to obtain uniform notches in the L.E. and T.E. is as follows: the blades are clamped in the jaws of a vise, projecting ⅛" above the jaws. Then rub the leading edge back and forth over the blade and stop when the leading edge touches the jaws of the vise. Naturally, you have to hold the leading edge square to the blade, but once you have the hang of it, you can really go into production!

Install the ribs on the ⅛" x 1" stiffener, then slip on the ½" x ⅝" leading edge. Cement well. Push the ends of the ribs into the corresponding notches in the trailing edge, but only part way. Squeeze the cement tube when holding the tip of it at each rib-to-trailing edge notch so that a drop of cement is squeezed in the small opening. Now, when you force the ribs in all the way, cement will spread around throughout the joint. Wipe any excess around the joint, spreading it over a wide area.



"SWOOP" BILL OF MATERIALS

One 1/2" x 5/8" x 36"; (1) 1/8" x 1" x 36"; (2) 1/4" x 1/4" x 36"; (1) 1/4" x 1" trailing edge stock; (1) 1/16" x 4" sheet; (1) 1/8" x 3" sheet; (1) 3/32" x 4" sheet; (2) 3/8" x 1/2" x 12" hardwood; (1) 1/2" x 2" x 12" hard balsa block; 1 sheet 3/32" plywood; (1) 3" bellcrannk; 3/32" dia. wire for push rod; control horn; and 3.5 ounce Veco pressure tank. Covering and dope to suit.

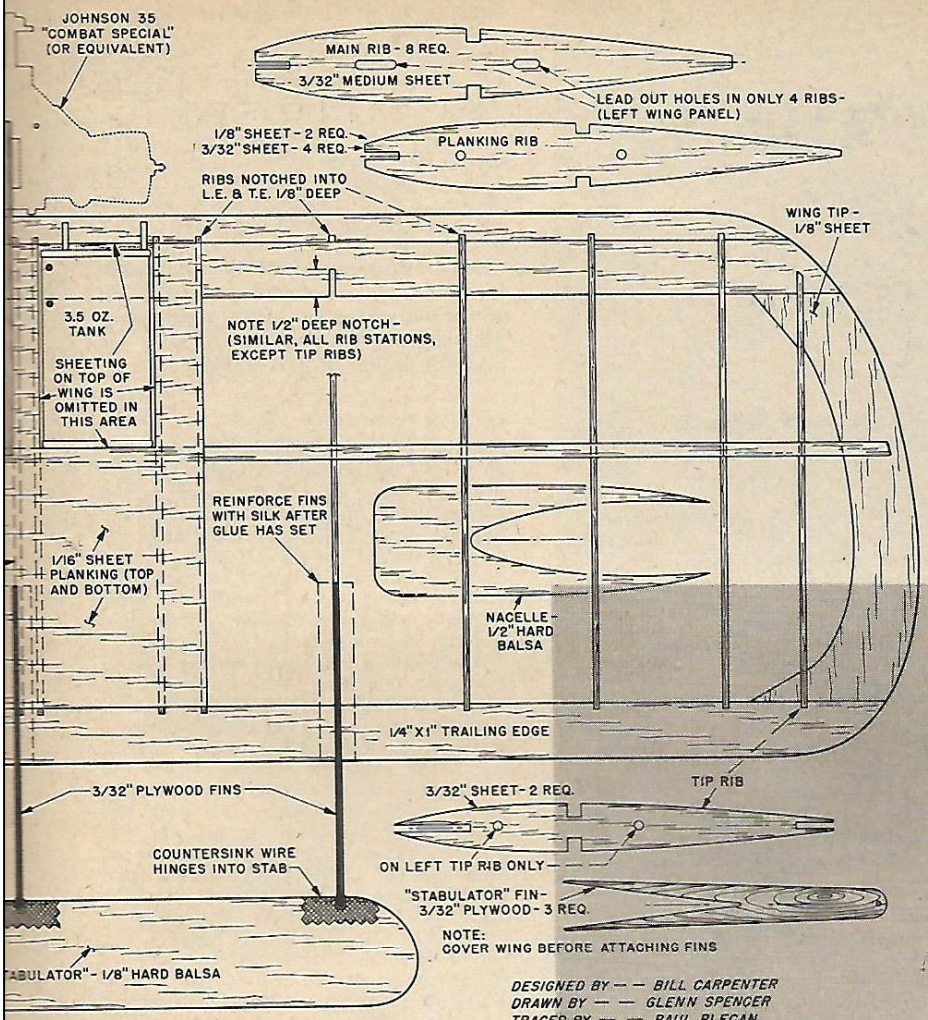
Cut the ½" balsa center block out of hard balsa. Slide in and cement the two center ribs, checking the spar notch alignment with a scrap piece of ¼" sq. balsa. Be sure to have this center block in place before the spars are added, as it can be almost impossible to insert once the spars are in place. The wing tips and spars are added at this time. Cut the spars at the middle of the last full rib near the tip of the wing. Short bits of ¼" sq. bridge the gap to the tip rib, thence to the tip itself. The hard wood engine bearers are trimmed to shape and glued in place. Use "Wilhold" or similar type glue and rubber band or clamp the bearers in place until the glue sets well.

Cement the bellcrank mount and tank platform in place. Scraps of ⅛" plywood under the corners provide anchorage for tank hooks. Drill 1/16" holes through these anchorage points and bend up some hooks to hold down the fuel tank. Style and method is unimportant, but make them strong. Holding the tank in place with rubber bands may not appeal to some modelers, but you just can't beat it for "removability" in changing or cleaning out tanks.

If you are running your engine on crankcase pressurization, use the tank placement shown—it has worked fine for me. But if you use gravity feed, lower the tank platform by about ½" so that the tank is level with the crankshaft center line. You will have to cut through the stiffener to lower the tank, but to make up for the loss in strength, trim another 1/16" off the bottoms of the ribs adjoining the tank compartment so that 1/16" sheet can be doubled up in this area. At this time it is best to install the bellcrank, lead-outs, lead-out guides, and push rod. Plank the center section with 1/16" sheet, top and bottom.

Drill the engine mounting holes in the engine bearers so that the engine is mounted close to the leading edge. Use "Perfect" blind mounting nuts for the engine mounting bolts, as they will be covered by the nacelle and will not be accessible later. The nacelle or nose blocks is cut from ½" medium or hard balsa, and try-fitted into place. Carve the exterior to streamline shape, hollow interior to accept crankcase, then cement in place.

Sand the entire model at this stage. Round off the wing tips, leading edge, and all exposed corners of the "stabulator" fins, even though they are not mounted yet. Use silk or nylon covering to obtain maximum strength, tough tissue if you are cutting corners budgetwise. The area around the nacelle and engine and front part of the center section can be fiberglassed. Use only thin fiberglass, as the heavy grades your boat-building friends may employ will



DESIGNED BY — — BILL CARPENTER
DRAWN BY — — GLENN SPENCER
TRACED BY — — PAUL PLEGAN

slows down the model . . . 25 degrees will be "wild" enough for all concerned.

Use 8 or 9 coats of thinned-out clear dope all over the ship, sanding between coats as necessary. Use color trim sparingly, as weight control is important in combat flying. If any wraps develop, remove them by twisting the wing in a direction opposite to the warp while holding the wing over a steaming kettle or vaporizer.

All that remains is to put on the prop, fuel her up, check the C.G. and you can wring her out at your local ball field or parking lot.

Build carefully, cement your joints well, practice all you can, and you should be a terror in the combat circle with Swoop.

Full size drawings for "Swoop" are on Group Plan #261 from Hobby Helpers, 1543 Stillwell Ave., New York 61, New York (sixty cents).

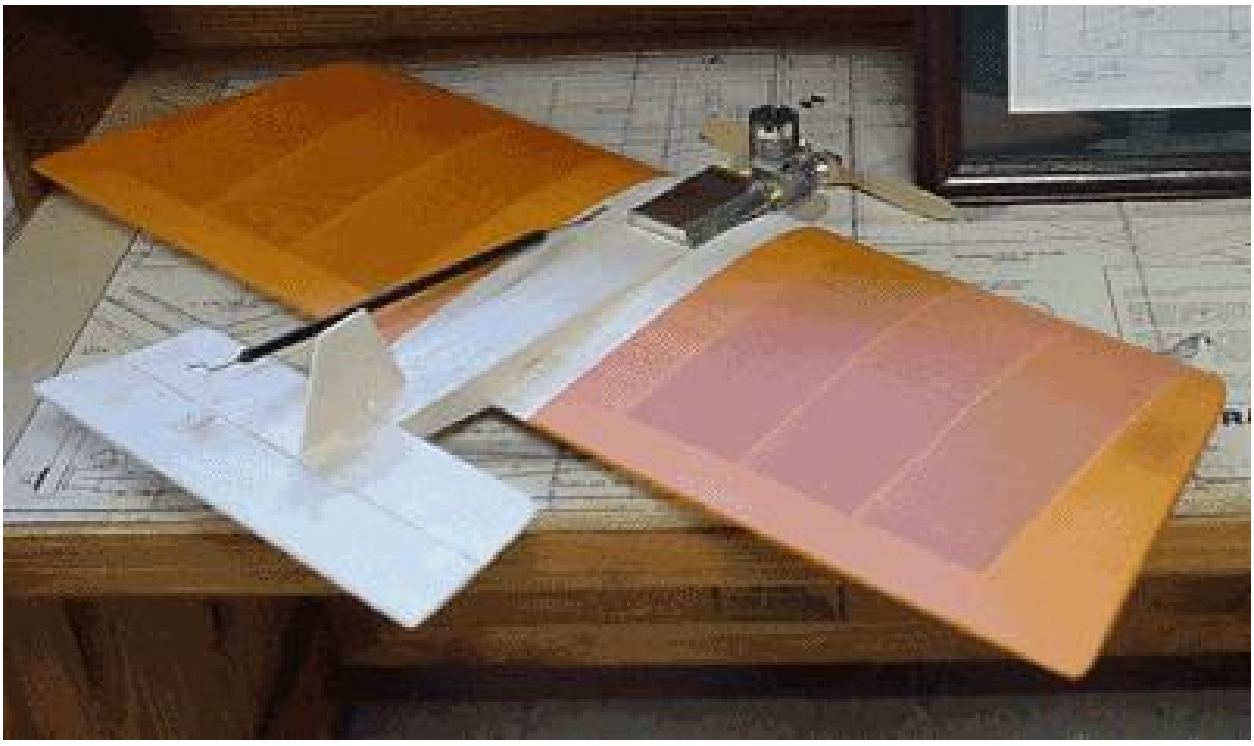
be too heavy. As a close substitute for fiberglass, silking the entire nose area with liberal coatings of dope will do nearly as well in reinforcing the nose section. Allow sufficient time between coats so that the dope dries hard, not tacky. I dope the whole wing structure two or three times before covering to stiffen the assembly.

Cut the "stabulator" from ⅛" hard balsa or 3/16" medium balsa. The fins are cut from 3/32" plywood, with all corners rounded off except where they mount to the wing. Drill the holes for the "stabulator" eyelets, mounting the eyelets by cutting standard ½A eyelets about 3/16" long and forming the second flare with a light hammer and center-punch. Mount the fins to the wing as shown in the plan view and reinforce the joint with fabric. Once dry, fit the 1/16" dia. wire hinges in place and reinforce with fabric as per plans. The control horn is installed and the pushrod bent to fit when stabulator and bellcrank are both in "neutral." You can use any method you desire, but it is recommended that stabulator travel be restricted to 25 degrees each side of neutral. Excessive control movement merely

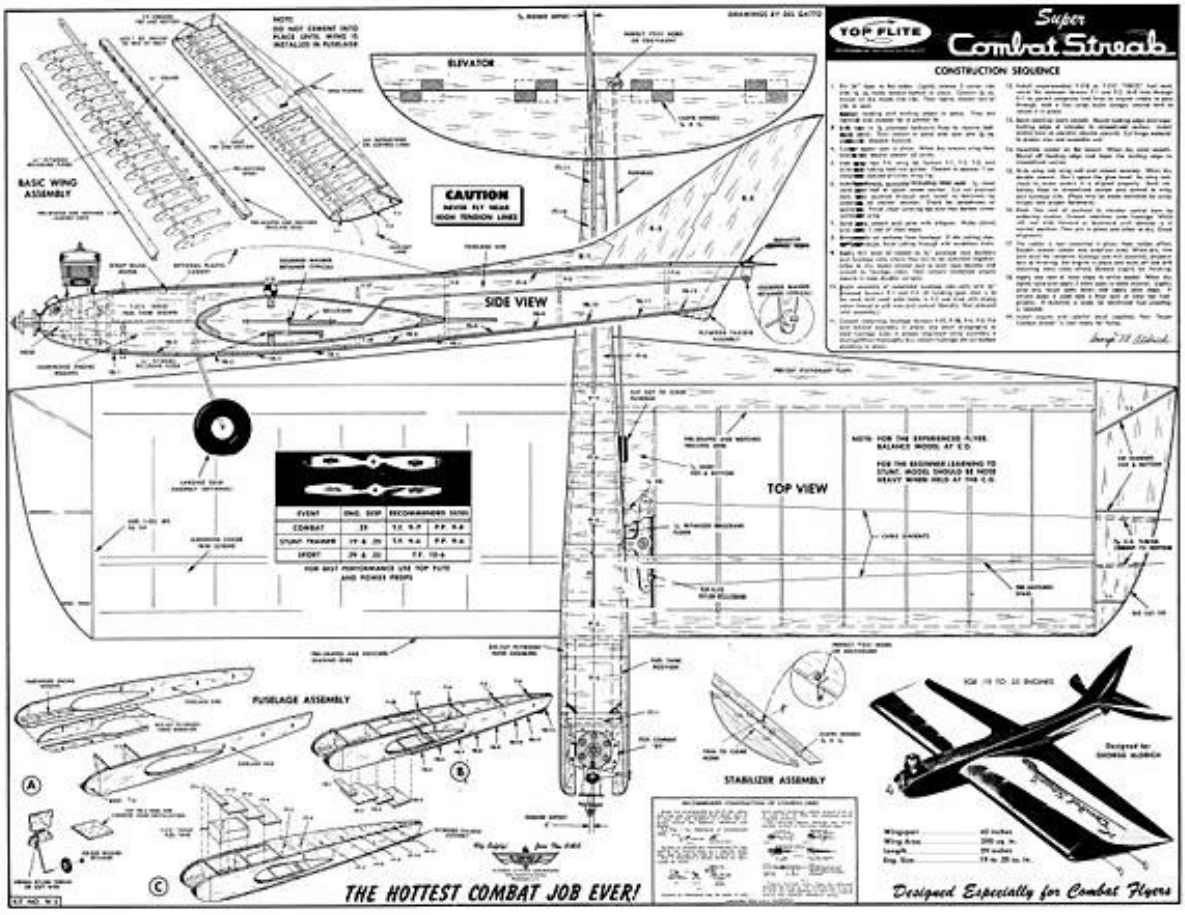
National combat champ Bill Carpenter of California (right) with his winning "Swoop" after taking semi-finals.

This Super Swoop was built by Bob Mears in late 2015/early 2016
One of many classic combat ships Bob has in his collection

In 1960 Midwest kitted the “Hornet” . . . Similar to the Veco Renegade kitted the year before.

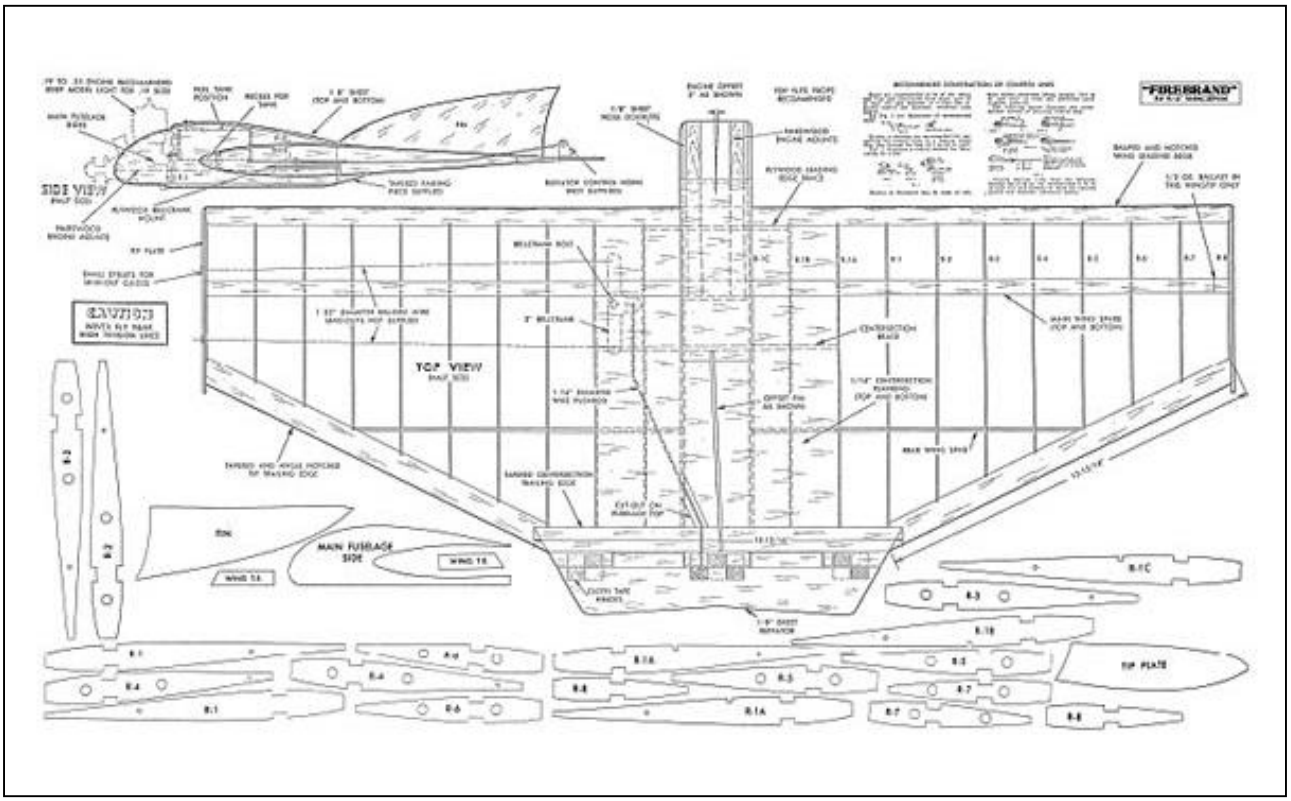


Top Flite came out with the ñCombat Streakò in 1960 . . . It was a box fuselage version of the iconic ñFlite Streakò. This one was photographed at the 2015 Vintage Control Line Combat Fly In held in New Jersey



The Super Firebrand was kitted by Enterprise in 1960
This beautiful version belongs to Barry Hobkirk
photographed at the 2012 Combat Graffiti event

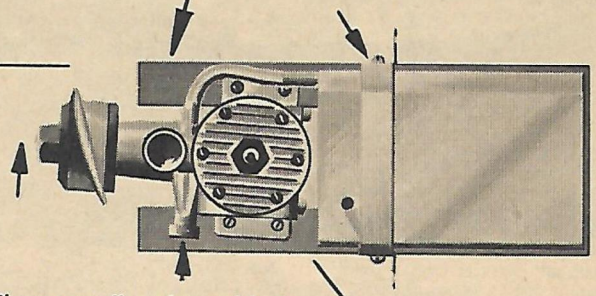
Cad drawing . . . Original Firebrand



On the next three pages please find a reprint of an article that appeared in the 1960 Air Trails Model Annual
It speaks to the point of development our sport was at in 1960

STARTING COMBAT...

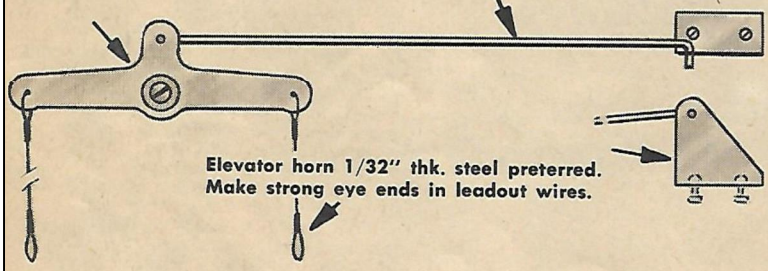
Use hardwood for engine mounts, maple or birch is better than pine or bass. Mount engine angled outward a few degrees to aid flying trim. Use fuel tank size adequate for five-minute flight. Mount tank firmly to prevent foaming and erratic engine running.



Use maximum size engine allowable. Best props for .35 engines: 10D-6P, 9D-8P, 9D-7P, experiment to find best for your engine and ship. Balance new propellers.

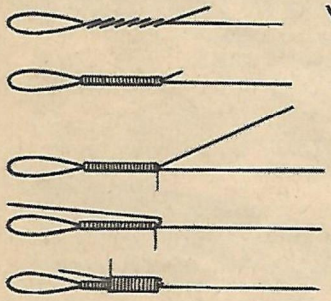
Change needle valve and body to left side.

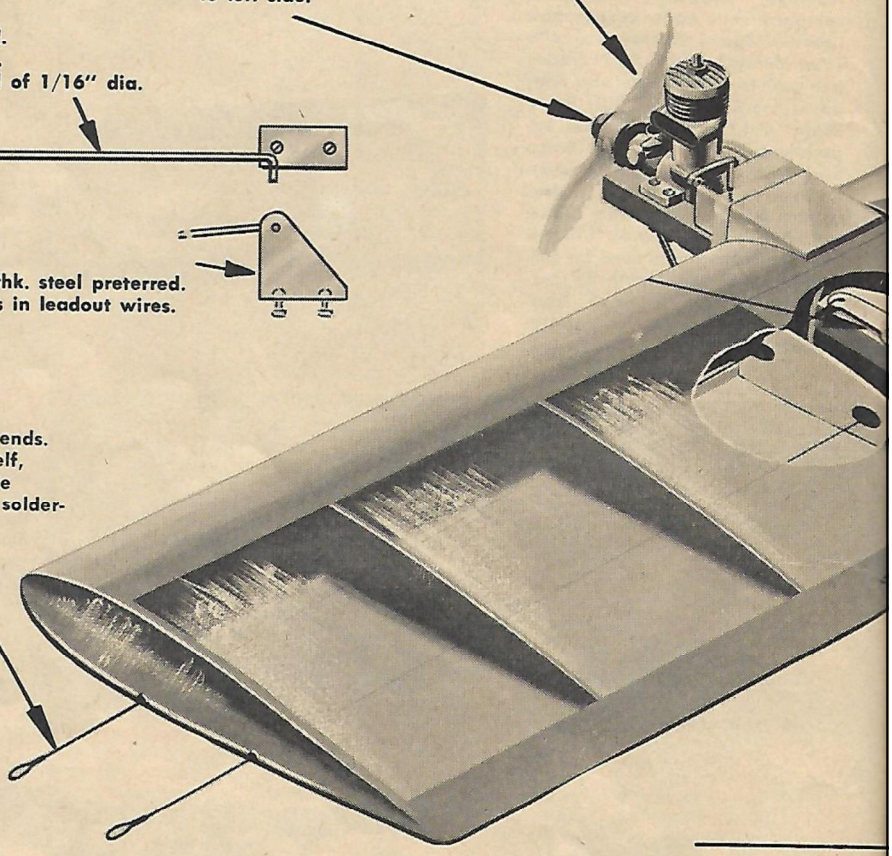
Whole control system must be rugged. Put bellcrank pivot on engine bearer. Pushrod wire 3/32" dia. wire instead of 1/16" dia.



Elevator horn 1/32" thk. steel preferred. Make strong eye ends in leadout wires.

Here are methods for "serving" wire ends. Flexible cable can be twisted over itself, then served with fine soft wire. Double wrap method very strong. Heat from soldering weakens wire.





■ Opinions may differ as to exactly when control line combat flying started its climb to popularity, but the event wasn't in the AMA rule book before 1950. With the upsurge of interest in yo-yo flying during the post World War II years it was inevitable that sooner or later several flyers would get into the same circle and chase each other.

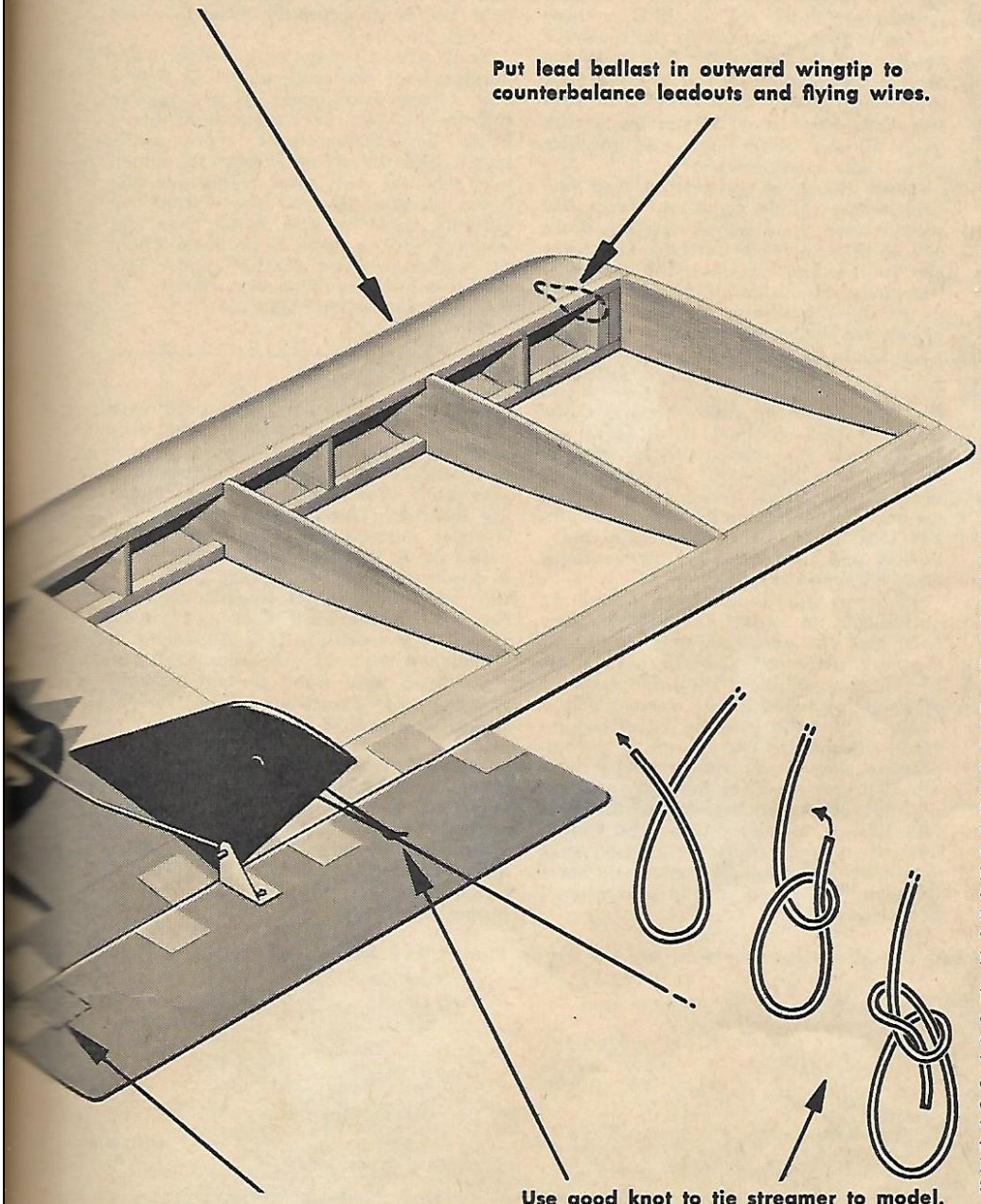
As early as the 1947 Nats in Wichita, Kansas, a group of flyers put five ships in the air at once just for fun. What a show! Flyers were tripping over each others feet, models tangled wires and the rat fight ended in one grand mess.

Control-line's godfather, Jim Walker, flew three ships at once early in the game. In the 1948 Nats, young Dave Slagle flew two stunt ships at once. With streamers on both ships he succeeded in engaging himself in combat! Whew! Soon other modelers picked up the idea and before long combat flying and streamer cutting became a popular exhibition event. Then it was strictly for fun and a great crowd pleaser.

In the East, credit must be given to Sterling's combat team that toured contests flying the YAK-9 and P-51 kit ships. And so the trend was started, such events as Team Racing (and later Rat Racing) showed that the fun factor went up considerably when there was more than one flyer in the center of the circle.

The present AMA rules for combat are the outgrowth of several years of acute growing pains. The event's popularity has made some rules necessary that do not please all flyers. This is inevitable of course, but earlier, when prolonged inverted flying at 3-inch altitude was permitted, combat was mad, mad, mad, and model mortality was awful.

Space does not permit a rundown of the complete AMA combat rules here, but the important points relating to design and flying are: Maximum engine displacement permitted is .36 cu. in. Flying lines must be 60 ft. from center



of model to center of handle. Pull test is 20 times model weight. Each flyer permitted only two models and two official flights (attempts and unofficials detailed in AMA regulations). No flying inverted or less than 8 ft. altitude for more than one lap. Center circle is 10 ft. diameter. Streamers are 8 ft. long with 4 ft. string leader. Flight time is 5 minutes, scoring of "cuts" and "kills" must be done in shortest possible time. Points are deducted from score for time elapsing after starting. Two-minute starting time allowed, both ships must fly one level lap before starting combat. Unsportsmanlike or discourteous flying, deliberately causing crash or collision is cause for disqualification.

First and foremost the combat plane must be a full stunt ship, capable of good speed and high maneuverability, indeed most combat jobs are good stunt trainers. Attack and evasion tactics require quick response yet stable characteristics so that the flyer can watch his opponent's ship and still fly his own without having to pay much attention to it.

The combat ship therefore must be a light weight for speed and stunting. So far a big ship has been better than a small one. The largest engine permitted should be used, you want all the power you can get. Remember that the combat model is highly expendable, so although it must be rugged enough for high speed and air loads it should have a minimum of materials; construction should be simple and require a minimum of work and building time. Don't bother with a twenty-coat hand-rubbed finish. Enough dope to keep the oil out is all that is necessary. Fancy stripes and gaudy decals make a colorful model, but are wasted on a combat ship. Build 'em "quick and dirty" . . . let's qualify that to not too dirty.

Anything less than a hot running engine is a real drag when the fight is on. Your engine should start easily and run like the well-known watch. Fuel tank and lines must be clean, tank should be at least 2½ to 3 oz. capacity for 5-minute flight depending upon engine. Any good stunt tank will do the job. Veco (Froom) tanks are popular. Tank center should be level with needle valve and firmly mounted to prevent foaming and poor fuel flow. Some engines tend to run rich in air even when leaned-out on the ground. Pressurization can help this problem. Cap vents with length of fuel line beveled at 45° with bevel facing forward. Experiment with different propellers to get best running and top speed. For .35 engines, 10″D-6″P, 9″D-8″P and 9″-7″P are preferred.

Simple beam mounts for the engine are best, these should be hardwood. Pine and bass crush easily at mount bolts because of vibration. Use birch or maple if possible. The engine beam mounts should extend well back into the structure for maximum strength needed to tie wing and fuselage together. The control system should be rugged. If possible, the bellcrank should be mounted on an engine bearer, not on a flimsy bit of plywood stuck on balsa fuselage side or wing rib. The engine bearers and bellcrank mount should form the strongest part of the model since combat ships are subjected to a pull test of 20 times the model's weight. Plenty of combat flyers are eliminated by the pull test during processing—before they even get to start an engine. The strength of bellcrank mount should extend throughout the control system. Use a 3/32″ dia. wire pushrod where you would ordinarily use 1/16″ dia. wire. The elevator horn should be at least 1/32″ thick aluminum, brass or steel, the latter being preferred because it stands up better under engine vibration. Make good strong wraps and eye ends on lead-out wires from bellcrank. If you like to use regular flying wires and simple handle, there are ready-to-use lines available made by Pylon. If you use a U-Reely control handle be SURE the reel lock works properly.

Like any other high performance model, the combat ship should be built with as accurate alignment as possible. This applies particularly to wing structures, since warped surfaces cause erratic flying. A warp that causes the model to bank into the circle is particularly troublesome and can cause loss of control during tight maneuvers. Proper balance is also very important for a good flying combat ship. Center of gravity should fall between 20% and 25% of wing chord. Models with regular tail surfaces can balance at 25% but flying wings should balance at 20%. Of course the bellcrank pivot and leadouts should be located behind C.G. position. Rearward C.G. position will cause model to turn into circle, while forward C.G. will make model too stable and make maneuvering sluggish.

Since combat flying is conducted in all kinds of windy weather, a few degrees outward offset of the engine thrust line

will help keep the model out on the end of the lines where it belongs. Engine thrust offset is more effective than rudder offset so the rudder can be mounted straight ahead, its main function anyway is to provide a place to attach streamer. Add a bit of weight to outside wingtip to help compensate for leadout and flying line weight. Don't use spinners on a combat model, they add unnecessary weight, some cause vibration and a prop change is time consuming when a spinner must be fitted during a re-start. Even though they may have a very short life, balance propellers carefully. As manufactured, props sometimes need careful trimming or sanding to balance exactly because of varying wood density or uneven varnishing.

Although the green beginner has on occasion jumped into combat competition and wiped out the old hands, this is not often the case. Flying a hot combat ship in the same circle with others takes a little getting used to for most yo-yo-fliers, so a little ground school should precede soloing in competition. Practice the stunt pattern to gain confidence and get to know your model thoroughly first. Fly in windy weather to learn how your model behaves under extreme conditions. Then try flying with your friends two at a time and later with three in same circle. Practice chasing tails (without streamers); don't try for kills or near misses at first. Get used to the footwork needed to pass each other and following each other around in the air. As your proficiency gains put streamers on your ships and have at it. If you are a club flyer, all the better. You can practice with fellow members.

When flying in competition you and your helper should be a real team. He should have your engine starting down pat, so that he can re-start for you without your having to leave the center of the circle. Hand launching is best way to get a combat ship into the air, since wheels are seldom used. A light ship with big engine will practically fly off your hand without much of a push. Have your helper familiar with launching your ship VTO or HTO. Do not hold full up during launch or you are liable to lose a helper. A hot ship will turn in its own length at low speed and whango, right back at your helper's back. When landing, try to put your ship down close to your helper so he won't have to chase around the circle.

Stick with a proven ship design, build duplicates of the same model so that a new design won't come as a complete surprise to you in competition. Some flyers like conventional types while others like the flying wings; fly which ever you like best after trying out different designs. If you are flying two different ships be sure flying lines and leadouts add up to 60 ft. on both. There are numerous good combat model kits available such as T-square, Bandit, ½ Fast III, Omega and Quicker.

Fleetwon

East Coast Control Line Combat Model

by Bob Peru

■ After the smoke clears away and the tattered streamers and balsa chips are swept from the combat circle, do you wonder what happened? Did your ship perform like a lead balloon?—Well, wait 'til next time—Resolved—that next combat ship has to be simple, easily built, low in cost, have red-hot performance and be expendable.

Fleetwon was designed with these requirements in mind. It has no fancy frills, just the bare essentials. It utilizes standard size wood and can be built in four or five hours. A minimum amount of wood is needed for its construction, a "must" since the price of balsa has recently increased. The design is a compromise all around, truly a happy medium. Though some smaller ships may be slightly faster their maneuverability suffers. Larger ships may turn a bit tighter but their speed suffers. This flying wing design behind a hot .35 engine will leave little to be desired in the performance department.

The K&B .35 engine was used with great success on original models but since you may use a different engine, be sure to balance model at spar by shifting engine along bearers to get proper mounting location. The correct C.G. location is most important on any flying wing model so do not depart from C.G. range as shown on plans. A forward C.G. position will make model sluggish in tight turns while rearward C.G. will make model very sensitive. If a .19 engine is to be used the engine bearers should be

Use firm light wood throughout construction of Fleetwon. Final weight should be about 18-20 oz. This gives the model a light wing loading of 5 oz./100 sq. in. This low figure permits speeds in excess of 80 mph and red hot maneuverability. For best results do not depart from construction shown on plans, be sure structure is square, warped wings made an inch longer so that engine weight may be shifted forward to get proper balance.

Full size plans for Fleetwon are on Group Plan #259 from Hobby Helpers (60¢).