

Sport Cassutt



Framed against the sky, the Cassutt semi-scale profile CL model looks very realistic. It's capable of the full range of Stunt maneuvers, as well as looking pretty. The cheek cowl reinforces the usually-vulnerable wing-fuselage joint.

OVER 25 YEARS AGO, then-airline-pilot Capt. Tom Cassutt built a tiny monoplane racer that captured the hearts and minds of air racing fans throughout the country. Entered in competition in 1958, the Cassutt Special I first flew to victory in the 1958 National Air Racing Championships, which prompted literally hundreds of air racing aficionados to request plans and information

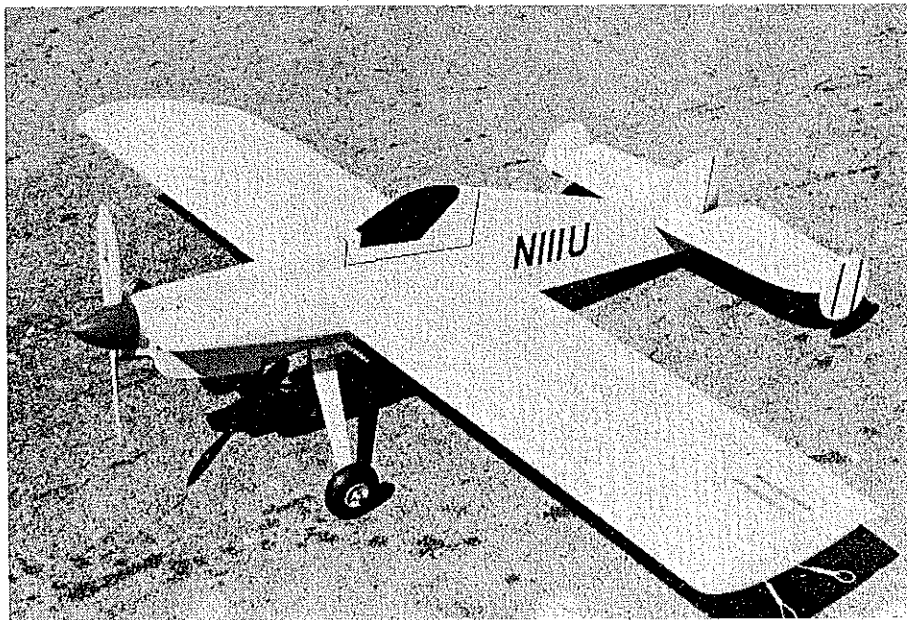
about Cassutt's clean machine.

In 1959, Cassutt designed an even smaller version of his popular ship, spanning just under 14 feet, and called it the Cassutt Special II. This diminutive speedster was capable of speeds in excess of 230 mph as it flashed around the pylons. Its squared-off lines and stabilizer tip plates gave it a uniquely saucy appearance as it

eased up to the starting line.

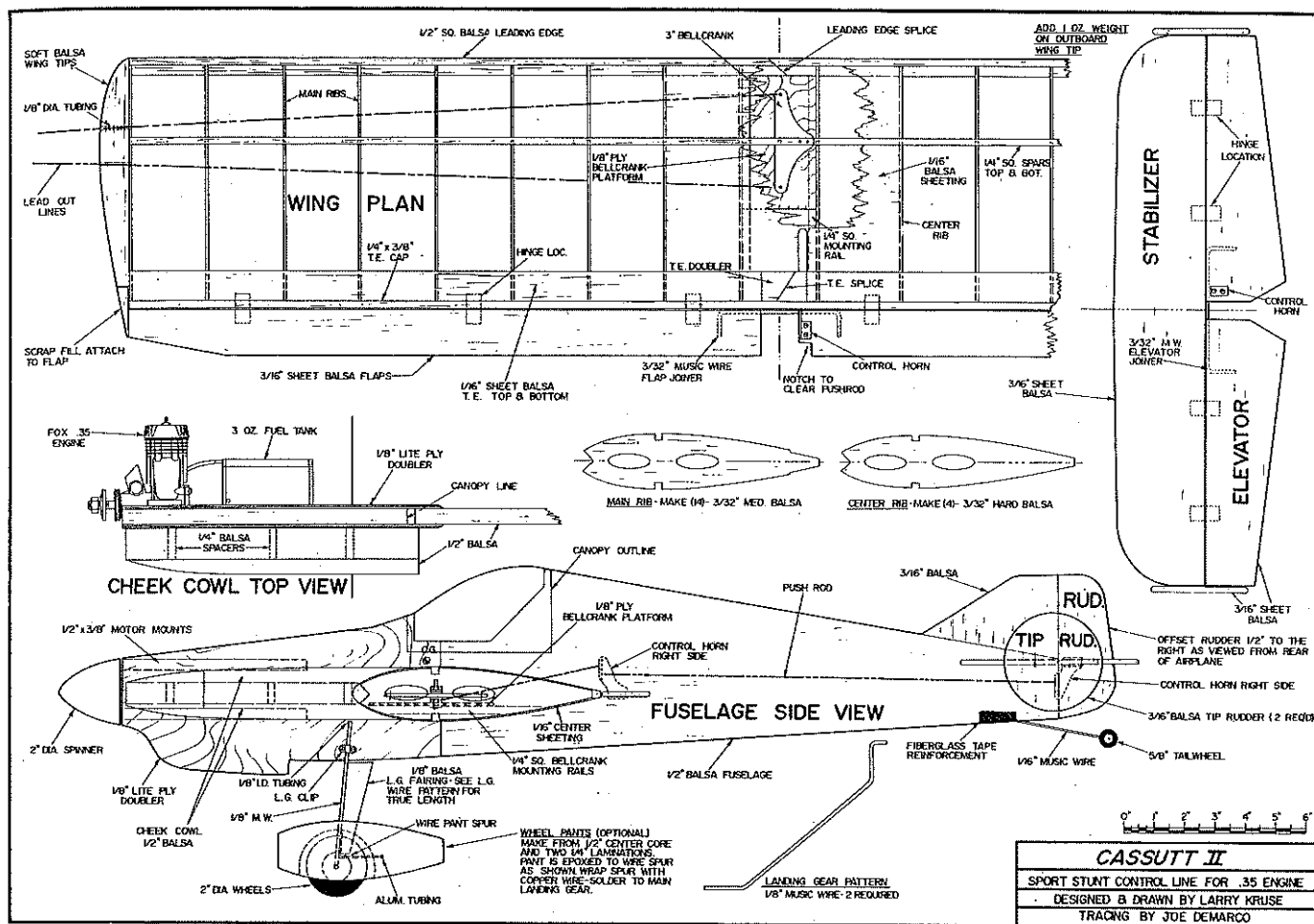
My acquaintance with the Cassutt Special II (#11) began about a year ago when our local airport advisory board staged an Airport Appreciation Day, complete with an air show, EAA static display, and pylon races. As luck would have it, there were two Cassutts entered in the races, and I had ample time to go over each one inch-by-inch during the time they were on static display.

373



Sub-rudders on the tail add interest to this sleek racing plane. Prototype, designed by ex-airline pilot Tom Cassutt, has a history of winning races.

Racing airplanes hold a special fascination for the air-minded, and the Cassutt racers have gained a lot of fans along with their trophies. Here we have a profile Control Line version of this sweet little ship (for a .35) that has enough aerobatic capability to satisfy most any flier. ■ Larry Kruse



I gained a whole new appreciation of the overall engineering excellence of the aircraft as it merged aerodynamic necessity with simplicity of design. The fact that the Cassutt Special II is as competitive today as it was two-and-one-half decades ago is, in itself, a testament to its designer and the veracity of the design.

I opted to go with a profile version of the Cassutt mainly out of necessity. My old Cessna Ag Wagon, which I'd designed and built a couple of years ago, was beginning to look so doggy that I really needed to bolt my venerable Fox .35 onto something new. Also, since I fly mostly competition Free Flight, I didn't want to spend a bunch of time on a plane that I get out only a dozen or so times a year to fly with the guys.

I did, however, want a plane capable of the full Stunt pattern, so you will find the Cassutt similar to a Magician or Banshee on the end of the line. Hopefully, Capt. Cassutt won't mind my taking liberties with his little racer by adding Stunt capabilities.

Construction notes. Since the Cassutt conforms to most of the precepts of profile construction, I won't go into a great amount of detail on how to put the thing together, but there are some areas that need to be touched upon.

The wing is the heart of any airplane. Regardless of how the fuselage is constructed, be it profile, built-up, foam, or whatever, the plane will fly only as well as the wing is built. A word to the wise is sufficient.

Ribs can be stack-sawn from 3/32 balsa in two separate stacks. Lightening holes (or lead-out holes) should be drilled or cut out while the ribs are still in the stacks. The center-section rib blanks should be of hard balsa; the remaining rib blanks can be of medium stock. Prior to beginning wing assembly, splice up the leading edge, trailing

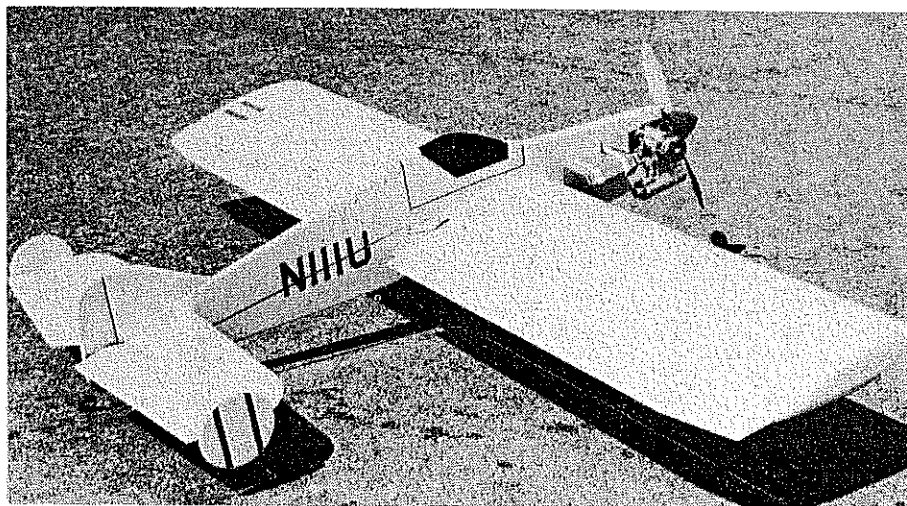
edge pieces, spars, and trailing edge cap strip. The 1/16 trailing edge pieces both need doublers at the splice joint for strength.

Begin construction by pinning the bottom TE piece over the plan and gluing all ribs in place. I used Goldberg's Jet (instead of the aliphatic resin I frequently use), and put the entire wing together in less than 30 minutes. When the ribs are all set in place, glue on the top TE piece by poking pin holes through it at each rib location and squirting a drop of Jet through each pin hole.

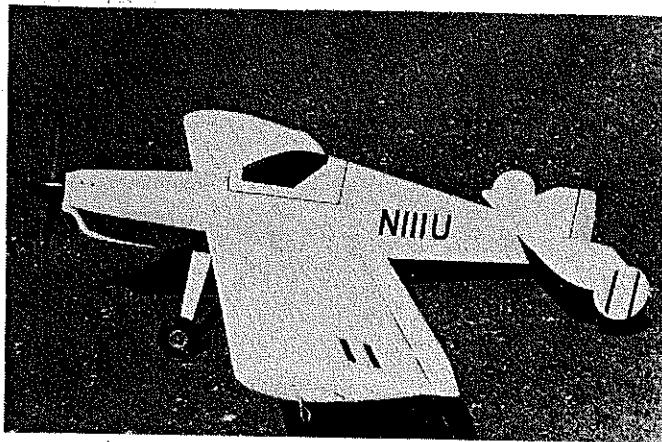
Spars are next. My favorite method of ensuring a warp-free wing is to pin the bottom spar to the plan, set (but don't glue) the ribs over it, and then glue in the top spar. When the top spar is firmly anchored in place, turn the wing over, and treat

the bottom spar in the same fashion. Now add the LE and the TE cap strip.

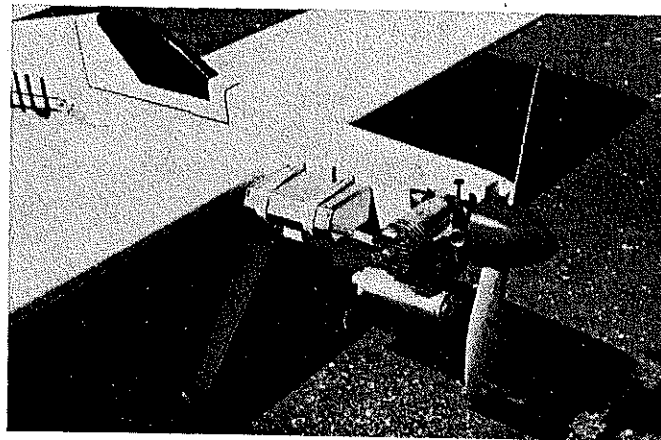
One way of getting adequate pressure on the LE in a notched rib assembly like this one is to cut six 4-in. sticks from 1/4 x 1/4 spruce (or you can use popsicle sticks, if you don't want to waste wood) and space them vertically and equally behind the wing spars. Use several rubberbands. Loop one of them around one end of each vertical stick, go around the leading edge, then loop the other end of the rubberband over the other end of the vertical stick. Use as many rubberbands as you need in order to assure adequate pressure on each LE rib joint before you lock it in place with Jet. The bellcrank assembly, support rails, and the center-section sheeting complete the basic



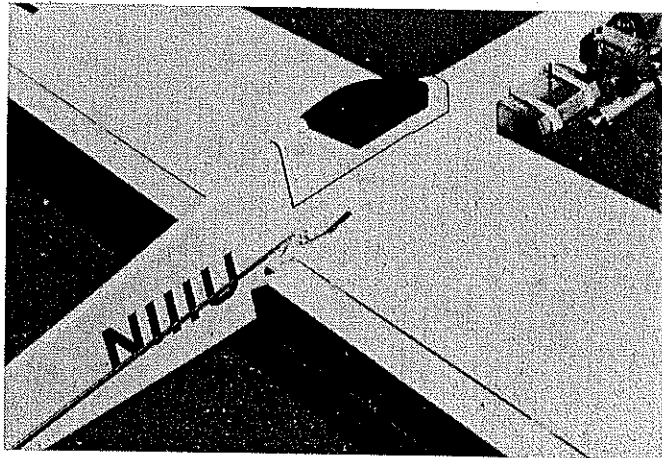
"Dirty" side of the profile shows engine and tank mount, linkage of pushrods. Full-span flaps aid aerobatics. Muffler is a good idea.



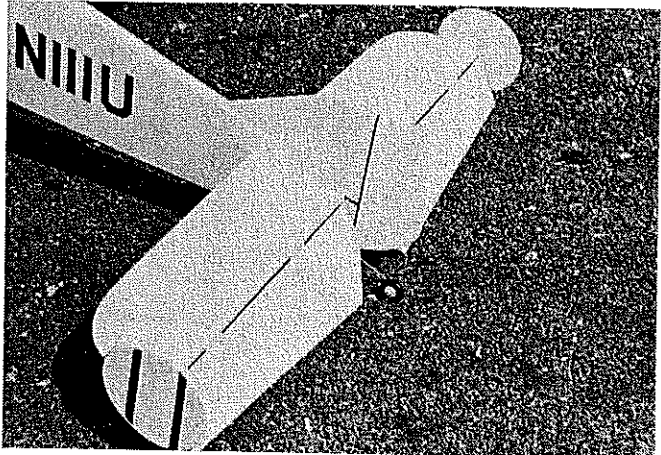
Cheek cowl is non-functional in terms of cooling, but does help strengthen the wing-fuselage joint. Note position of leadouts.



Front engine screws have a washer beneath each; engine offset helps keep lines tight. Fox .35 is a good, reliable engine for sport.



Note location of linkage for flap actuation. Muffler not only cuts noise, but helps keep sticky stuff off the top of the plane.



Author recommends using RC-type hinges for elevator, because of the fact that they can be almost completely hidden.

wing assembly.

Stabilizer surfaces and flaps are both 3/16 balsa. Since these both have to be hinged, don't choose stock that is so hard that the termites have rejected it, or so soft that the hinges might pull free under stress. Medium weight, medium grain is best here. Slot the flaps and their adjoining surfaces for hinges.

The fuselage, in typical profile style, is cut from firm 1/2-in. stock. You'll need to lay up the fuselage blank from a good 36-in. length of balsa, and then use scrap material to flesh out the canopy/cockpit area. Check your scrap box or the remains of the last kit you built. Since the nose moment is relatively long and the Fox .35 I used relatively light, you may want to cut about 1/4-in. off the nose and move the engine bearers back accordingly—if you're planning on using an Enya, O.S. Max, or some type of heavier engine. You can, of course, compensate by adding weight to the tail, if need be. However, a general rule of thumb is that lighter is nearly always better when it comes to model aircraft. For the same reason, the nose doublers are from 1/8 Sig Lite-Ply rather than heavier birch plywood.

When both wing and fuselage have been completed, you may slide the wing through the wing cut-out in the fuselage, and epoxy it in place. Use Sig Epoxolite for the wing/fuselage fillet. The flaps can then be attached permanently, using epoxy to hold the hinges in place.

The scoop area on the left side of the nose is made of scrap 3/16 balsa and should be fitted rather carefully to the wing leading edge. It will undergo significant amounts of vibration, so a close fit and good epoxy joint is imperative. You

might want to fiberglass the area where the scoop joins the wing for the sake of appearance and longevity.

The landing gear is bent from 1/8 music wire and inserted into a brass tube fitted to the fuselage. The wheel pants shown on the plans add to the overall appeal of the aircraft. However, they are easily subject to the pits and dings of ground handling, so I didn't use them on the prototype. They are held in place by short wire spurs soldered to the main LG leg and then inserted into a tube buried in each pant.

Attach the tail surfaces, and install all assorted horns, pushrods, and clevises that make the thing go uppity-up-up and downity-down-down. (I've got to quit watching re-runs of *Those Magnificent Men and Their Flying Machines* while I'm writing.) I like to use RC-type goodies of the nylon variety for horns and clevises. They're easy to adjust, maintain, and replace if necessary. Speaking of which, if you get 'em all installed, take 'em off so we can cover and dope the critter.

Sand all surfaces carefully, and fill the exposed wood surfaces with sanding sealer or a mix of talcum powder and clear dope. I elected to go the silkspan-and-dope routine mostly because I hadn't done it in such a long time that I thought I needed the practice. My guess is that most of the modelers who might build the Cassutt are novice to intermediate fliers who might not have the time/skill/money/reason (pick one, they're multiple choice) to go for a zooted-up airplane finish for sport flying. You can still do some very nice things with dope and patience.

Three to four coats of sealer on the fuselage and tail surfaces should be sufficient. Sand each coat

carefully after it dries. Avoid getting sealer on the Epoxolite fillets. Wet-cover the entire ship with medium weight silkspan, and give all surfaces from five to seven coats of clear dope after the covering dries. Allow plenty of drying time between coats of dope to avoid unnecessary runs and dope build-up. Continue to brush or spray on clear dope, sanding carefully between coats with 320-400 wet-or-dry paper until surfaces are filled and an overall sheen is evident.

Color coats come next, and if you've done a good job in preparing the surfaces, two to three coats brushed or sprayed should be sufficient. Tom Cassutt's original Special II was silver (with red markings and numerals on the wings and black numerals on the tail), but so many Cassutts have been built in a rainbow of colors that practically any color should be appropriate. Suit yourself in that respect.

Flying notes. The plane should balance on or ahead of the CG noted on the plan. Add weight to the nose if necessary (although I doubt that it will be). For inexperienced fliers, it's fine to have the ship a bit nose heavy. More advanced fliers will want the CG right on the money.

The only adjustment I had to make with the prototype was to add a flat washer under each of the front engine lugs in order to get the ship to stay out on the lines the way I like it to during overhead maneuvers.

Like its full-scale counterpart, the Cassutt is clean and maneuverable and will reward you with many satisfying flights over a long flying season.