

Dieselaire

► With the advent of the new small size engines, it was easy to recognize the potential opening for free flight design. To utilize these potentialities, the Dieselaire 36 began its career as a very hasty pencil sketch. After several more sketches, and some area calculations, the final design was decided upon. Understand, however, that this model was never intended to climb straight up; sport models just don't operate that way. For a full days flying though, the Dieselaire is ideal.

The model pictured is powered with one of England's finest small diesels, the Mills, which has a displacement of .045 cu. in. Of course it is quite impossible to buy one of these little engines at every corner model shop, so the new glow-plug engines may be substituted, up to the O.K. Cub .074.

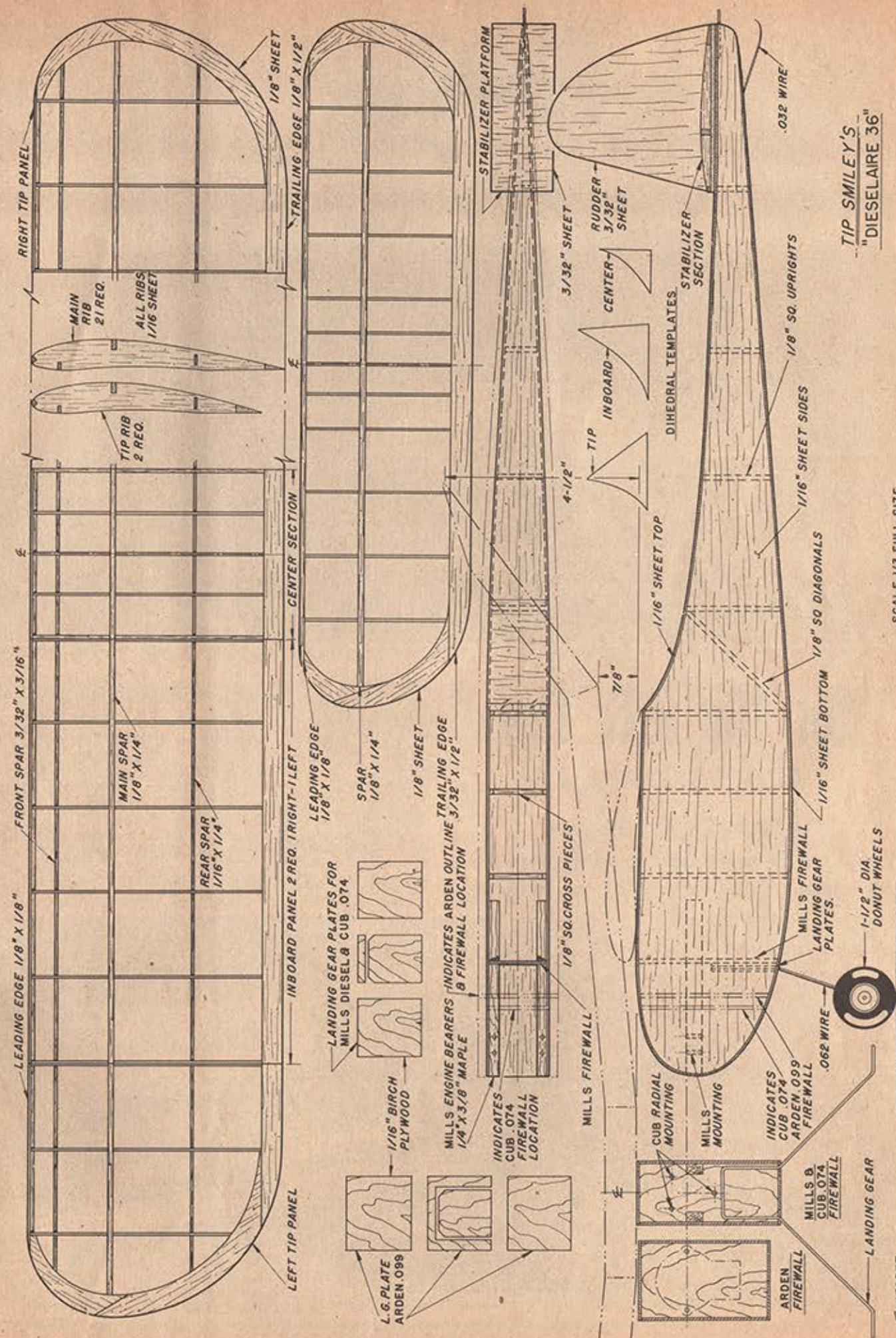
Contrary to popular opinion, sheet balsa construction is actually quite light, and it's a known fact that it is much stronger; hence we decided on this type of construction. Simplicity is evident from the plans.

One of the beautiful features of the sport type model is that you can get in so many fine flights in such a relatively short period of time. A bad crash is generally a foreign thing to a good sport flyer, so join the gang and give free flight that long awaited "shot in the arm."

We begin construction with the fuselage. Merely cut the two sides of 1/16" hard sheet balsa, and cement the 1/8" square balsa uprights in place on the inside of each sheet. (Positions of these uprights are shown in dotted lines on the plan.) Now cement the two sides together at the extreme rear, and add the firewall. When cement has dried thoroughly, place the cross-pieces in place at station No. 4. You will notice that the fuselage has the same width from the nose to station No. 4. From this point to the rear, the sides will automatically assume the correct contour. Next add the remaining cross-pieces between the sides. Now cement the engine bearers firmly in place, and add the landing gear, which is of 1/16" dia. steel wire. Landing gear mounting plates are shown on the plan. Use cement liberally as the landing gear takes the brunt of the abuse encountered in landings. As a final step, the top and bottom of the fuselage are added. At points of extreme curve, such as the nose and "swayback," run the grain of the wood cross-wise. After sanding thoroughly, cut the opening for your engine. This completes the fuselage assembly.

At this time we begin construction of the fin and stabilizer assembly. The fin is simply cut from 3/32" medium sheet balsa, while the stabilizer is of built-up construction. Leading edge is of 1/8" square hard balsa, center spar is of 1/8" x 1/4" hard balsa, and the trailing edge is of 3/32" x 1/2" hard balsa. Ribs are of 1/16" x 1/4" stock. Trim ribs to contour after stabilizer is completed and has been removed from the plan. Now the tail assembly is complete, leaving only the wing to be built.

As construction is conventional, the wing is built right over the plan. Five separate panels are required to complete it. These are the center section, the two inboard panels (one right, one left) and the two tip panels. Notice the rugged construction; an ample number of strong spars practically guarantee a long life for your model. Don't worry about the extra weight, because this model is for sport. The dihedral templates shown on the full-size sheet are used to give all the ribs in each respective panel the correct slant. The ribs in the two left panels slant to (Concluded on page 40)



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Dieselaire

(Continued from page 20)

the left, while the right panels slant to the right. The ribs in the center section are set at 90 degrees to the plan. When all five panels are complete, they may then be joined. If you have used the dihedral templates accurately, the dihedral angles will be correct. Spar joiners are not necessary on this model, but if so desired, they may be made of 1/8" x 1/4" hard balsa, and used only on the main spar at each dihedral break. After a good sanding, the wing is ready to cover.

Your Dieselaire is now complete! Of course it probably looks rather naked standing there with no skin, so let's get busy on that covering job. The model pictured is covered with light weight (rubber powered) Silkspar, but a good grade of Jap tissue would be fine. We also suggest that you cover the entire fuselage to prevent splitting, but this may be omitted if so desired. If you like a fine finish, but hate to add the extra weight, you can really enjoy yourself by using all the dope you care to on this little job. The original, finished as shown, weighs a shade over seven ozs. complete with engine and prop, ready to fly! This is very light when you consider the rugged construction, coupled with the fact that the wing area of this model is 207.40 sq. in. That places the wing loading at about five ozs. per square foot. Color scheme on the original is white wings and stabilizer, clear doped, with orange and black trim on the leading edges. Entire fuselage and fin are color doped orange. We suggest that you use at least six coats of clear dope, plus two or three of colored on the areas mentioned.

Now for the flying! Select a nice calm day for your initial test hops. Run your engine as slow as possible for the first few flights to familiarize yourself with the model's disposition. This model should balance at 1/3 of the chord from the leading edge of the wing. Adjust carefully for trim before trying too much power. When you are satisfied with the flight pattern, you may progressively add more power to each flight. If you have chosen an .099 engine, the performance should be out of the sport model class, especially with the light weight of this model. An 8" dia. x 6" pitch Power Prop and an 8" low pitch Top Flite prop have been used successfully on the Mills version pictured.

We Test The Great Lakes

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of the bellcrank on top of the motor bearers. Horizontal tail is next and a thin tail horn using a 3/4" leverage worked fine on the test craft, so no change is recommended here. It was located at tail center with horn on right side of ship.

Building the wings is easy as framework is constructed on top of drawing. Lower wing is straight on the leading edge and provides no difficulty, but the upper wing with sweepback was done by assembling ribs in notched spars and twisting frame to fit the drawing. This must be done carefully to avoid cracking ribs at trailing edge. Since the airfoil is curved on the bottom, the spars must be blocked off, drawing at each end. Scraps left over from the die-cut ribs worked fine for these shims. Although the wings are strongly made, extra ribs were added to the test ship to improve the tissue covering. Small 1/32 plywood splices reinforce all spars at the breaks.

On other biplane scale models it was found that a strong center section strut system makes the difference between a model of limited flying and one capable of being flown over and over. Severe stresses encountered in stunts, bad landings, etc., are transmitted through the top wing to fuselage by means of 1/16 diameter steel wire, square U-shaped struts that are bolted in place at both ends. This is considered good aircraft practice as real ships have their wings bolted in place with steel tubing struts.

To mount the wire struts, 1/16 x 3/4 x 2-3/8 plywood plates are cemented to top of the

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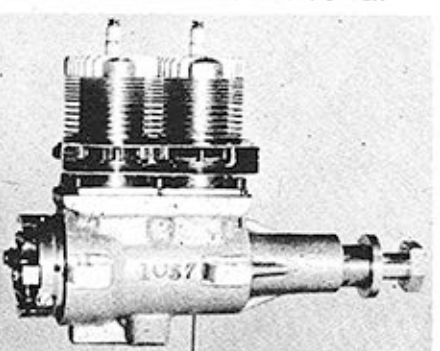
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