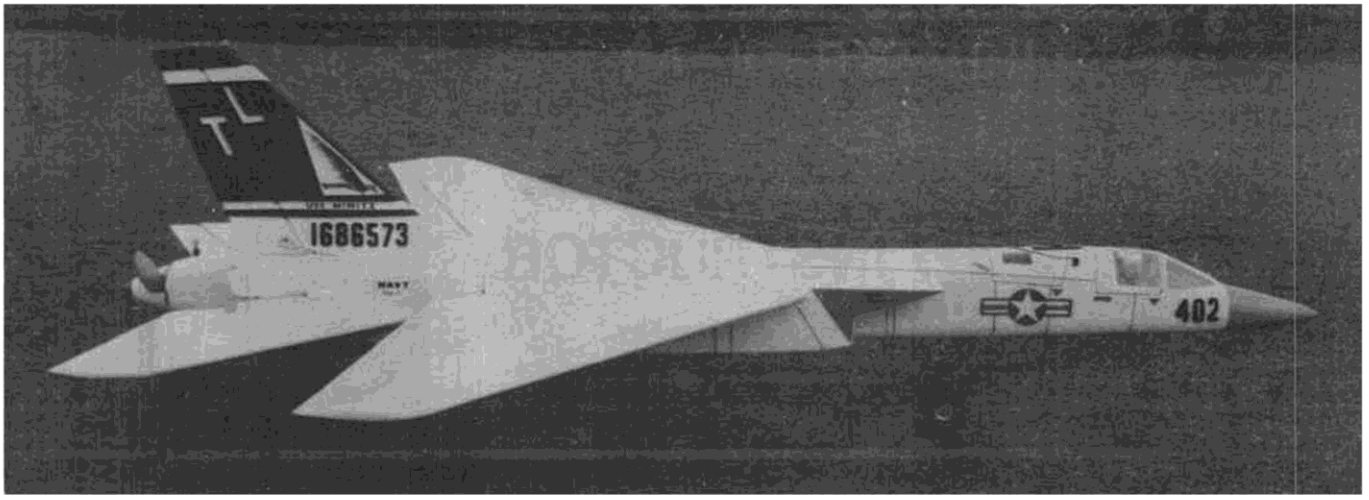


✪A5A✪VIGILANTE

By PAVEL BOSAK . . . Jet models don't all have to be ducted fans, nor do they have to look strange with an engine and prop in the nose. From Czechoslovakia, an interesting example for .40 engines and sharp pilots.

• After testing a pusher engine on a delta model and conducting experiments with this concept on the model L-39 Albatros, which was published in the January 1978 issue of RCM, and after the great interest shown by model builders (I received a lot of letters not only from the U.S.A. but also from Europe, Brazil, and even from Singapore and the Philippines), I wanted to build another model of this same concept. I decided to build a semi-scale model of the A5A Vigilante, which best suited my concept.

The development of the full-size Vigilante began in the later part of the fifties, when the U.S. Navy needed a carrier-based plane which would be able to transport an A-bomb. The first prototype was called the Vigilante YA 33-1, and its maiden flight was on the 31st of August, 1958. The first four planes were in use by flight VAH-3. The automatic flight control system of the Vigilante was the top electronic system in its time. In the case of airplane A3J-1, new construction techniques were introduced, and the airplane was used in the development of the Navajo B-64 pilotless missile. Another constructional specialty was represented by the somewhat unusual way of throwing bombs backwards from the long tunnel bomb rack. In 1962, the designation A3J-1 was changed to ASA. In the same year ASA airplanes appeared on the deck of the aircraft carrier Enterprise. The development of the Vigilante went on in versions ASB and RA-5c. These types are a little bit different in shape. Because of a new fuel tank location, the shape of the upper fuselage part was changed.

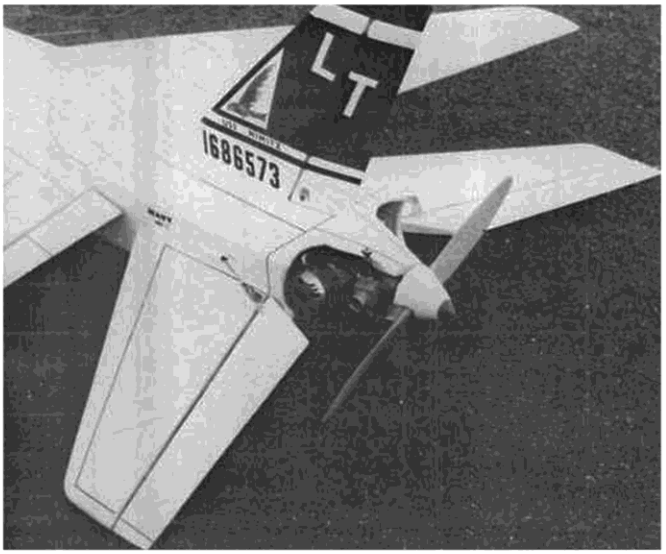
MAIN TECHNICAL DATA
Wingspan: 16.15 meters
Length: 23.25 meters
Maximum speed: 2,230 km/hr.
Maximum speed at sea level: 1,260 km/hr.
Service ceiling: 19,500 meters

DESCRIPTION OF MODEL

The model is made for a .40 engine; that is why its measurements are not big. Thanks to its sweptback wings it is also space-saving. That is also the reason why the wings are not removable. The final result is a far lighter and more compact model. In comparison with an authentic scale aircraft, net wing area and elevator area are larger. Some unimportant details are also left out. In spite of it, the model looks elegant and is very impressive in flight.

CONSTRUCTION

Begin the construction with the fuselage sides. There are four altogether; two inner longer ones and two outer shorter ones. The inner sides are strengthened with full-length plywood doublers, the outer ones in the place



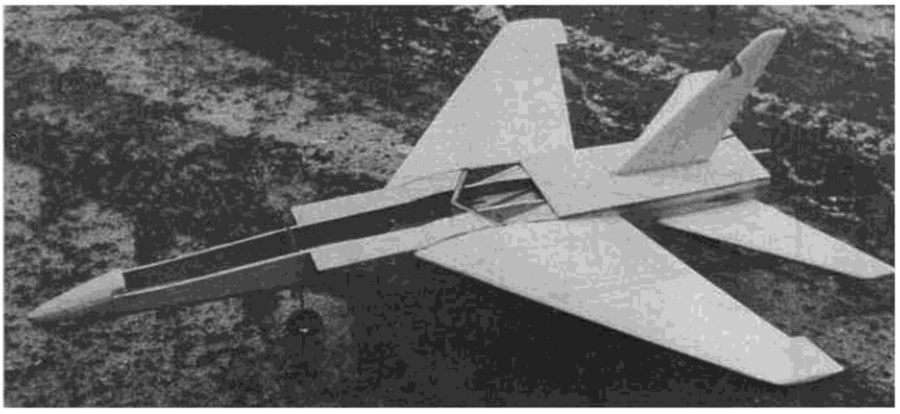
Pusher engine installation in the Vigilante. Note that each elevator has its own pushrod, cables used on original model.

The author prepping his bird for a flight. Highly unusual model draws much interest wherever it is flown.

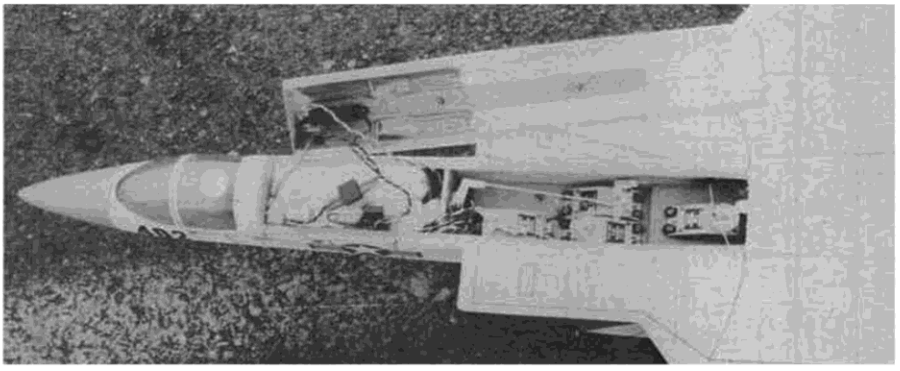
where the main undercarriage blocks are located. Cut the fuselage formers. On former F4 fasten the nose wheel leg and to former F6 attach the engine mount. Epoxy the inner sides and formers together. Epoxy part of the fuselage bottom in place from the notch on the outer sides to about 4 inches aft. Epoxy the main undercarriage mounting block in place. Epoxy the half-finished fuselage and outer sides together, as shown on the plan. When doing the top and bottom sheeting, epoxy the wood with the grain going across the fuselage. Whey dry, attach the main undercarriage so that your model can stand. Now do the front bottom part sheeting between the inner sides and also epoxy the nose in place. It can be cut from hard balsa or from spruce. Do not try to save weight in the nose. Now close up the top fuselage part as far as the end. The outer sides must be a little bent in the rear fuselage part, and this we can do by epoxying a cross-grain balsa strip in the rear bottom fuselage area.

According to the plan, build the stab and fin. Both of them are of the same construction: a balsa frame covered on both sides. In the rudder there are also spruce spars which go as far as the fuselage bottom. Sand the stab and fin and epoxy them to the fuselage. Cut a hole for the stab in the outer sides and in the inner ones cut a groove in the balsa as deep as the plywood doublers. Cut a hole for the fin in the top fuselage part. Now epoxy the stab and fin in place.

Now it is time for the wings. According to the plan, cut ribs and the web W10. Epoxy ribs to W10 and at the same time epoxy the spars in place. Cut notches in the inner and outer fuselage sides so that both wing halves meet in the fuselage center and rib W1 touches the outer fuselage side. Epoxy plywood triangles W10 to the center of the webs. When dry, epoxy leading edge W9 and trailing edge W11 in place, then make bottom wing balsa sheeting. To our half-finished model add the tank, servo rails, servos, and pushrods. You can see on the plan how to place the pushrods and servos. The tank in the original model is placed at the center of gravity. This is, however, made possible by an engine with pump or in-line fuel pump, such as that by Robart. If you do not want to use a pump, place the tank in the rear fuselage part, but then you must put some extra weight into the nose, and thus the model's weight is higher.

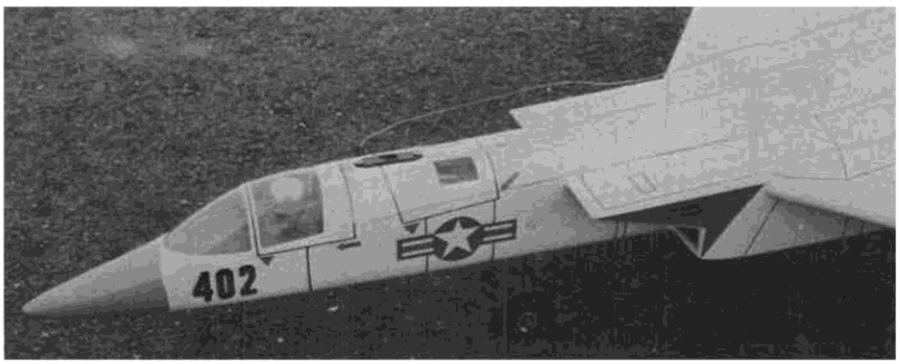


Half-finished basic framework. Long nose permits placing radio gear far enough forward to compensate for the engine in the tail. A very short-coupled model!



Installation of Futaba radio in the prototype. Switch is mounted in hatch, a good idea... if nothing else, it keeps the hatch from getting lost.

When pushrods are dry, finish the fuselage and wing sheeting. Epoxy the wing tips in place, and also the fin. Now cut from harder balsa the engine cowl, which is gradually formed into a cone. Finish up the balsa front fuselage sheeting. Sand the whole model. Cut off the top front part of the fuselage; thus we get a removable hatch for battery, servos, and receiver. Sand the hatch edges and epoxy plywood strips in place, as shown on the plan. After epoxying these strips, put the hatch back on the fuselage, but between the edges place a thin piece of plastic wrap so that these two parts do not become glued together. While the whole thing is drying, bind a rubber band around it. In the places where the hatch is held, epoxy two threaded bicycle spokes in place. The whole hatch is held by two nipples. Epoxy inside the top hatch a strip of plywood and also the windows. Now sand the whole front part of the fuselage and cover the whole model with thin tissue. Make the mold for the canopy and form your own canopy in a vacuum-former such as a Formicator. Now epoxy the canopy in place. For a more realistic appearance you can place a figure of a pilot in the cockpit. The last job is to cut the rudder, ailerons, and elevators from balsa and fix them in place with nylon hinges.



Air inlet ducts are open all the way down the fuselage, provide cooling air to the engine. Engine doesn't get cooled unless the model is moving, so don't spend too much time on the ground.

PAINTING THE MODEL

The whole model, when covered, is painted with clear and colored dope. Lines imitating sheet metal are done with drawing ink. This is surely not the only method of painting, and anyone can choose his own. The color scheme on my model does not exist on any full-size plane; it is a combination of various color schemes of different types. As a base for an original color scheme, use a magazine with a published description of the Vigilante.

ADJUSTING AND FLYING THE MODEL

Install the receiver, pushrods, and engine. Solder the wheels on and check if controls move smoothly. Put some extra weight into your model if necessary to achieve the balance point. The engine has no side thrust, but does have 2° of downthrust. Now adjust engine throttle action. As a muffler you can use a Muffl-air or a standard muffler turned against the flight direction. In contrast to standard models, the pusher propeller is

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something very unusual, and that is why when adjusting the needle valve you must firmly hold the whole model. If a standard model moves a little bit it means nothing, but here an inch is enough and your fingers are cut by the propeller, which is nearly a saw. That is why you must pay attention to it. On takeoff, let it run about 60-70 meters on the runway, and do not move the elevator. Then slightly touch it and the model will take off. If the takeoff is too sudden, the propeller can touch the ground. I should like to mention that this has never happened to me. Of course, I have been flying from a flat and straight runway. While landing, the propeller of my model touched the ground a few times, but that was because the landing speed was too slow. If the landing is in jet style nothing can happen.

The model is controlled as any other F3A model. During the flying you can hardly recognize that there is a pusher engine. The model is small, and that is why it flies fast with an O.S. Max .40 FSR. It performs every F3A maneuver with the exception of a spin. I think it could perform it, but I have not tried it yet. As I found out during meetings with other model builders, the model itself is nice and attractive. There have been discussions about it, and a lot of people want to build it. If anyone decides to build a Vigilante, I wish many nice takeoffs. If there is anything in my description that is not understood well, I shall answer every question by way of correspondence. •