






SPAD

Simple Plastic Airplane Design

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Type = Combat

Wingspan = 40 inches

Engine = .30 cu in

Channels : 3, Throttle, Aileron and Elevator

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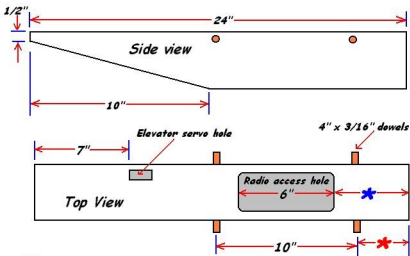
SPAD Dogfighter

*.30 cid or
below B-Class
Combat Plane*



Materials:

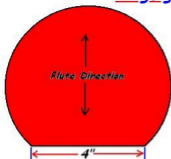
1. 4 Mil Coroplast for wing lower panel and tail
2. 2Mil Coroplast for wing upper panel
3. Canadian 2 3/8" O.D. PVC Gutter pipe for fuselage
4. 1/4" Dowel for wing leading edge
5. 3/16" dowel for wing hold downs
6. 1/2" plywood (or your preference) for firewall
7. 1/4" x 3/4" aluminum screen door center bracing for wing spar
8. Small self tapping screws for tail/firewall/control horn mounting
9. Zip-ties for receiver/battery/servo mounting
10. Double sided foam mounting tape for throttle servo mounting
11. Medium CA glue
12. Propane or butane torch for "flaming" Coroplast
13. Your Engine, Mount, Tank, and Radio
14. Standard hobby tools
15. A Dremel with a cutting wheel make cutting gutter pipe very easy!
16. Tin Snips work great for cutting out small PVC parts

Dogfighter Fuselage

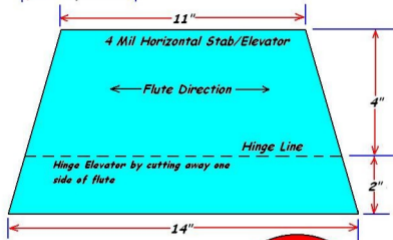
1. Use Canadian 2 3/8" O.D. PVC gutter pipe
2. Save scraps to make tail mount "L" brackets, control horns, horn back plates, and aileron servo zip-tie doubler
3. There is NO down or right thrust
4. Use your preferences for firewall material
5. Leave 3/8" lip on sides of radio hole
6. Use your servo for elevator servo hole outline

***** If you are using a lightweight Norval or equivalent engine and micro servos, cut radio hole 6" from front of fuselage. If you are using a heavier engine cut radio hole 5" from front of fuselage.

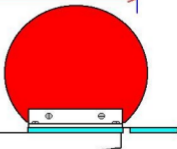
***** Do NOT install hold down dowels until LAST. Everything else must be flight ready! This is how you set your CG. Tape wing to airplane and position for perfect balance at forward edge of spar. Install dowels 1/2" forward of wing leading edge and 1/2" aft of wing trailing edge.

Dogfighter Tail

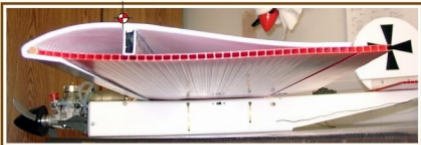
The Vertical stabilizer is made from 4 Mil Coroplast and is simply a 6 1/4" circle with a 4" flat cut off. You can use a 3 pound coffee can as a template!



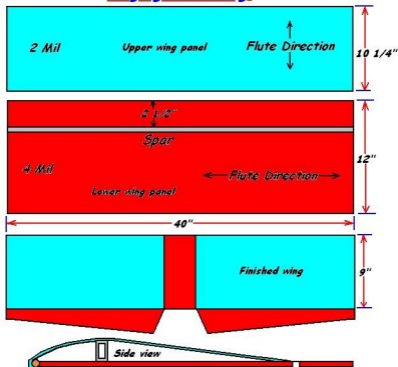
Fabricate two 3/4" x 3/4" x 4" long tail mounting "L" brackets from the gutter pipe and install tail to fuselage using small self tapping screws. Drill very small pilot holes for screws to tap tightly into!



Dogfighter Wing



*When building your wing you will have to "flash" all areas of Coroplast to be glued using a propane or butane torch. Run a medium flame across the plastic slow enough to burn the manufacturing oils out of the plastic, but quick enough so the plastic doesn't melt. **PRACTICE ON SCRAP FIRST!!!** It only takes seconds, and there is very little indications that you have done anything. You may see a slight vapor wave in front of the flame, and the plastic may warp slightly and darken in color...it will return to normal in a few seconds. When using medium CA...**USE ONLY A DROP EVERY 1/4" TO 1/2"**...**USING TOO MUCH GLUE IS THE BIGGEST MISTAKE MADE HERE!** Also, rough up the surface of the aluminum spar with coarse grit sandpaper prior to gluing.*

Dogfighter Wing

1. Cut 2 Mil and 4 Mil pieces as shown.
2. Glue bottom wing onto top wing with $\frac{3}{4}$ " overlap.
3. Cut spar to length and glue to bottom wing
4. Glue $\frac{1}{4}$ " dowel in place.
5. Score 2 Mil coreplast as needed to wrap around dowel.
6. Fold upper wing and glue to spar and trailing edge. A board and weights works good here to hold trailing edge down while glue sets.
7. Cut away 4" area between ailerons, and shape ailerons to your desire. The prototype's ailerons are beveled slightly at the root, and measure 3" at the root and taper to 1" at the tips.
8. Hinge ailerons by cutting away one side of flute
9. Glue 4" wide 2 Mil piece to top center and insert scrap push rod into leading and trailing edge flutes for rubberband crush protection.

Dogfighter Aileron Servo Installation

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Cut a hole in the wing just aft of the spar for a snug servo fit and install aileron servo using a zip-tie and zip-tie doubler on the wing bottom

$3/4" \times 3/4" \times 1/2"$
Base home made PVC
control horns

Scrap push rod pieces in leading and trailing edge flutes of wing center wrap work great for preventing rubber band crush!

Scrap PVC control horn back plates and small self tapping screws

Please note that all control horns are "flushed" and glued on as well as using screws and back plates!!!

Servo lead

Aileron servo zip-tie and PVC doubler

Throttle servo installed with double sided foam mounting tape and a zip-tie

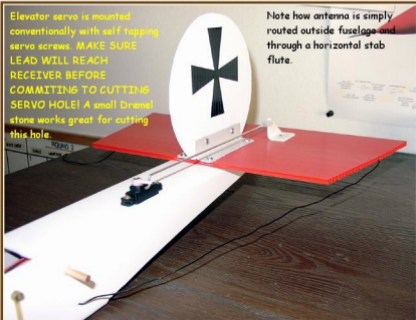
Receiver

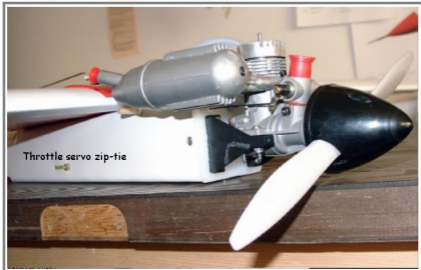
Battery

Note Battery and Receiver zip-tied to side of fuselage. Switch is mounted conventionally. Antenna is routed out of fuselage behind receiver.

Elevator servo is mounted conventionally with self tapping servo screws. **MAKE SURE LEAD WILL REACH RECEIVER BEFORE COMMITTING TO CUTTING SERVO HOLE!** A small Dremel stone works great for cutting this hole.

Note how antenna is simply routed outside fuselage and through a horizontal stab flute.





- 1** Install fuel tank wrapped in foam for a snug fit.
- 2** Install firewall with at least one screw per fuselage side.
- 3** Install engine mount and engine conventionally.
- 4** Once **EVERYTHING** is done to flight ready condition, install wing hold down dowels. Tape wing to fuselage, and position for perfect balance at forward edge of spar. Install dowels 1/2" in front and 1/2" behind leading and trailing edges. Coat dowels with CA for fuel proofing. They should be installed as close to top of fuselage radius as possible...be careful you don't drill into your fuel tank!
- 5** "Click" your prop to stop horizontal when the engine is shut off for landing.
- 6** Follow ALL AMA safety guidelines.
- 7** Set all control surface throws to as much travel as you dare...and **GO KICK SOME BUTT!!!**
- 8** Questions? Comments? Please visit the Spad Message Board at:
<http://members.sitgadgets.com/spad/board.html>