

BUILDING HINTS

By Bob Yount, DCRC Training Team

Almost every kit or ARF comes with good instructions, read them.

Experience has taught that some areas need clarification or amplification, so the following points are very important. Also, these are things that are checked at the field before a new plane is allowed to fly.

Control Surfaces.

Be sure that surfaces are well attached using glue or epoxy, depending on the type of hinge. If epoxy is used don't glue the hinge point. When attaching control horns, the holes in the horn should be in line with the centerline of the hinge or the amount of movement will differ from one direction to the other. When setting up the radio and servos make sure the direction and amount of throw is correct.

Servos.

Make sure to mount servos securely and see that the motion is unrestricted. To assure proper throw, the servo arm should be close to perpendicular to the line of control throw.

Engine.

The engine and its mounting must be free from play and secured so that vibration, and there is a lot of that, will not cause it to loosen. Bolts and nuts are preferred to screws and it is a good idea to use Loctite on the threads. Usually "T" nuts are used on the rear of the firewall to attach the motor mount. Again Loctite is needed, and make sure the bolts through the firewall aren't so long they will hit the fuel tank. It is also a good idea to locktite the muffler mounting bolts and any bolts passing through or otherwise attached to the muffler.

Setting up the throttle connection and travel is very important. The setup must provide that the throttle can be totally closed. To do this it may be necessary to adjust the throttle barrel stop screw. Make sure that there is no interference with the full travel of the control. Check the engine instructions if necessary.

Fuel Tank.

The engine requires fuel to run and fuel leaking into the fuselage isn't good. Make sure the clunk (that weight on the end of the pickup line) doesn't hit the back of the tank; it must move freely. Be careful to fully seal the cap to the tank. The pressure line from the muffler should exit at the top of the tank.

Alignment.

Wings should be square with the fuse (fuselage or body), as should the vertical and horizontal tail surfaces. There should be no twist in the wing. The instructions should provide information on how this is done; if it doesn't, get help. Yes, the plane will fly with some misalignment, but it will fly much better with good alignment.

Center of Gravity.

Somewhere in the instruction (they were read weren't they?) there is a specific location given for the center of gravity (CG or balance point) of the plane. The proper balance point is critical to the plane's ability to fly. The CG should be determined with the plane fully assembled, but empty fuel tank. A hint is to have the receiver battery outside the plane so it can be moved forward or aft to attain proper balance. Hopefully the battery can then be placed at that location inside the plane. If the plane is tail heavy (worst condition), there are brass spinners or other weights that are used to correct the balance. In any case, do what is necessary to get the proper CG.

Steering Setup.

First, make sure right rudder gives a right turn when taxiing. Second, don't make the rate of turn very fast; a twenty-foot circle is fine. Third, with the controls in a neutral position the plane should roll straight.

A special caution for tail wheel airplanes: If flying off a hard surface, a gentle steering control is necessary. Some tail draggers have the tail wheel steering arm attached directly to the rudder which makes for exciting take offs. Klett, or some other brand indirect steering is really needed.

ARF SPECIAL NOTES.

Joining Wing Halves.

How the two wing sections are joined is one of the most critical parts of ARF assembly. One kit has a metal rod for a carry thru which is strong and allows for disassembly. This is fine.

Most wing sections are joined with a fairly short dihedral brace, sometimes laminated with metal. Unless that brace goes at least 6 inches into each wing, it is a weak point. Even if it is that long the following methodology is strongly suggested:

Slather the carry through with 30-minute epoxy to the point that epoxy oozes out at assembly. Fine, wipe off the excess and set the wings so that the dihedral is supported and there is no warp between the two sections. After the epoxy has set up over night, strip off a width of the covering material, 2" for a 40 and 3" for a 60 size plane. Obtain a 2" or 3" wide strip of fiberglass that is long enough to go fully around the wing joint. The servo should not be in the center of the wing at this time. Put thin layer of epoxy on the wing wood and then apply the cloth, hopefully with some overlap. Next apply epoxy to the fiberglass strip and smooth it out. The joker from a deck of cards is a good tool for spreading epoxy. Later cut out the fiberglass to mount the servo and get a strip of sticky covering to cover up the fiberglass.

Attaching Stabs.

Most kits seem to provide for good attachment of the horizontal stabilizer, but not all are as good with the vertical. After these have been attached per the instructions, check that both are fairly rigid. If the vertical stab isn't rigid, a piece of triangle stock balsa can be added where the stab joins the fuse. Use epoxy. A similar approach can be used on the horizontal stab if necessary, but make sure the control surfaces remain free.

GOOD LUCK AND ASK FOR HELP IF YOU NEED IT!!!!