

Junior F1D Kit Notes

The F1D Junior kit has nearly all the parts and material needed to build one plane. The builder will need to supply the film covering, OS film or Y2K film. Any other film will add weight. A cement is needed to adhere the film. Many use a light dusting of 3M Super 77 spray cement but there are other techniques. Also, the builder needs to have a nitrocellulose based cement (NC) such as Duco or Ambroid and some acetone solvent. A water thin CA glue (such as Super Glue) is also needed. White glue or yellow wood glue is also needed. Various tools are needed including, for example, an X-Acto type knife and a small brush. Applicators like those shown below can be used with the thin CA.



All joints are glued using NC unless otherwise noted.

The prop spars are attached to the preformed prop blades using white or yellow wood glue. The spar is attached along the line on the underside of the blade with the tip of the spar at the line near the tip of the blade. The spar is attached so that x's on the spar are located on the top of the spar and on the side of the blade line with the x's. Only a very small amount of white (or yellow) glue is needed – only a thin smear at most.

The wings and stabs are assembled on the full size wing and stab plans. The spars are lined up on the plans so that the triple line marks on the spars line up with the tube marks, the plus sign in a circle, on the plans. The wing leading edge spar has boron fibers on the top and bottom. Note the orientation of the notches at the ends of the spars. The notches should face outwards. It is suggested that the outer ribs on the wing and the stab are glued with a small amount of thin CA glue. This is because we will use some solvent in the area of these joints and acetone loosens nitrocellulose cement (NC). Use NC on the other rib joints. For the stab, the plan is color coded and the stab ribs should have the colored spots match up with the same color on the stab leading edge (the curved stab spar). The rib ends are angled to match the curved stab spar. The wing tips are adhered to the spars with a spot of NC on the outer joint. The builder will loosen the tip to spar joints (by brushing on a small amount of acetone until the joint gives way) after the wing is covered to add the dihedral to the wing and stab. After the dihedral is set, reglue the joint with NC.

A jig like that shown below can be used to align the tubes on the spars. A drop of NC is placed on the spar and the tube, while on the jig, is pushed to the spar.



After the wing and spar are covered and the dihedral is added, the tubes are glued onto the spars using NC. The tubes have been pre-coated with a thin film of CA glue as NC does not stick to the tube material (polyimide) but NC does stick to CA. The tubes are oriented so that the block line is away from the spar (the CA coat is on the opposite side). The tubes are attached where the triple lines are located. NC is used for the tubes so that the tubes can be adjusted by loosening with Acetone but that is usually not needed as the posts can be slightly bent as needed.

The prop bearing is attached to the underside of the motor stick with CA. The bearing has a three degree left thrust so the bearing should be aligned with the line (at three degrees) on the underside of the motor stick. The bearing is held on with CA glue. The kit has two small rubber bands. Use these to hold the bearing in position and apply glue around the edges of the bearing. The glue will be drawn in between the bearing and the balsa. Remove the rubber bands when the glue has set. Make sure the bearing alignment is correct before gluing. A 2" length of 0.013" music wire or 0.010" carbon rod, inserted in the bearing, makes a good reference. The rod or wire should also be parallel to the motor stick so that there is no down or up thrust.

The bearing is reinforced with a carpet thread, two wraps on the front and rear of the bearing. Glue the thread knot with thin CA and the thread to the aluminum bearing with thin CA. The rest of the thread should be coated with NC.

The tail hook is glued on using CA (the prong sticks into the back of the motor stick). A triangular shaped wedge is placed in the front of the tail hook. The large side is against the motor stick and the end grain goes against the front of the tail hook. This wedge is glued with CA.

The motor stick bracing post has a slot cut into the top. Make sure that the slot is aligned parallel to the motor stick. To make this easier, the chamfer on the post should face out when the post is attached. The brace fiber (6# UHMW polyethylene fish line (Spectra or Spider Wire are commercial names) is wrapped and tied around the tail boom and the front of the prop bearing. The bracing fiber is tightened to just bend the motor stick the smallest amount. The fiber's knots are glued with CA at the places where the fiber wraps over the end edges of the motor stick. Just a very small amount of CA will be sufficient.

After the bracing fiber is attached, the prop bearing is reinforced with a short piece of hard balsa. This brace keeps the bearing from flexing when the motor tension is high. The builder will need to fit the brace into the bearing and glue with CA.