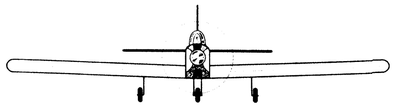
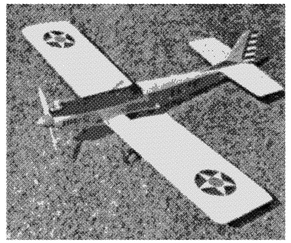
GEMINI

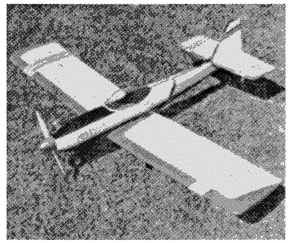
BUILDING INSTRUCTIONS

KIT NO 161



Gemini is a medium sized aerobatic model that is designed for modern 4 channel radio control equipment and .30 - .40 size engines. The original model was designed by Ron De Chastel of Brisbane, Queensland, Australia and has been extensively flown in both two wheel and three wheel versions by both experienced flyers and beginners and its attractive appearance, ease of construction and exceptional performance, in both low speed handling, and high speed manoeuvres made this an ideal model for Aero-Flyte to produce in kit form. The exceptional low speed handling makes Gemini an ideal low wing trainer when fitted with a .30 engine while a good .40 and a good pilot produce competition winning performances.



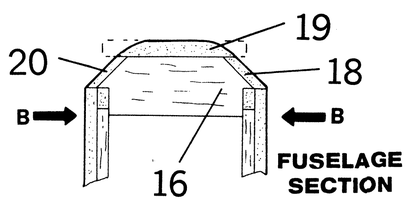


It is important to study the plan carefully and thoroughly before you begin building. Should this be your first low wing aerobatic model make sure that all stages of the construction are thoroughly understood. To cater for those who fly from rough flying fields the model can be constructed so that the wing can be retained with rubber bands, however, for experienced flyers using good flying fields we have provided the necessary parts for a "bolt on" wing. A major feature of Gemini is that it can be built in either a two wheel or three wheel version and by using various colour schemes, canopy, open cockpit etc. you can easily build your own individual version. No longer does each model need to look the same because they were built from the same kit as the above two photographs show. Both of these models were built from Gemini kits.

A good flat building surface will enable you to build quickly and accurately so that your model will be easier to trim during initial flights. It is difficult to trim an aerobatic model which is built with warps or twists.

STEP ONE FUSELAGE

Using epoxy cement, cement and clamp formers 1, 2, 3, together to form a strong 9 ply former. Cement former 4 to former 5 and drill two ¼" diameter holes where marked. Using C17 balsa cement fit the 1/8" x ¼" strips to each fuselage side from a point behind former 6 to the rear of the fuselage. Place the two fuselage sides on edge and upside down over the fuselage top view and cement ply formers (1, 2, 3) and (4, 5) and balsa parts 10, 11, 12 into place. As this assembly forms the basis of the fuselage it must be accurate and strong so double check the alignment and use plenty of cement. Chamfer off the inside of the fuselage sides at the rear so that they fit together neatly and cement. When dry remove from the building board and cement formers 14, 15, 16, 17 into place. Refer to section B-B and trim and fit parts 18 and 20. Trim off the top of 18 and 20 and fit fuselage top decking part 19.



Fit the front top block, wing supports 13, wing hold down block, triangular gussetts. It is advisable to fit the wing hold down block even if you are building the rubber band wing retaining version as this block adds strength to the fuselage structure.

STEP TWO

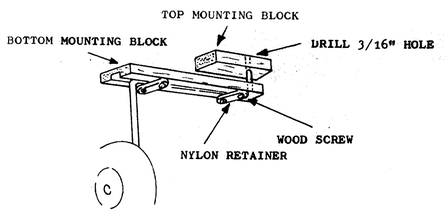
Construct the tailplane over the plan from parts 26, 29, and the ¼" x 3 x 17¾" balsa supplied. The elevators (part 27) are also placed over the plan and joined with ¼" dowel supplied. Cement fin parts 23, 24 together. Sandpaper all of these parts to a smooth finish with rounded corners as shown in the fuselage side view and cement the tailplane to the fuselage checking that it is square with the fuselage. Cement the fin to the tailplane and fit the top rear block, part 22 and the fin supporting strips into place. Attach the rudder and elevators to the fin and tailplane with nylon hinges as shown but do not cement the hinges at this stage.

At this stage of the construction, it is advisable to install the steerable nosewheel if you are building the tricycle version, servo mounts, and your R/C equipment. The installation of the R/C equipment will depend on the type or brand that you are using, however, the installation shown on the plan will serve as a guide. The receiver and battery pack must be loosely packed in foam rubber and all linkages must move freely. At this stage, fit the control horns and pushrods, making sure once again that all linkages move freely. Fit the bottom sheeting 30 - 36 and trim to shape.

STEP THREE WING

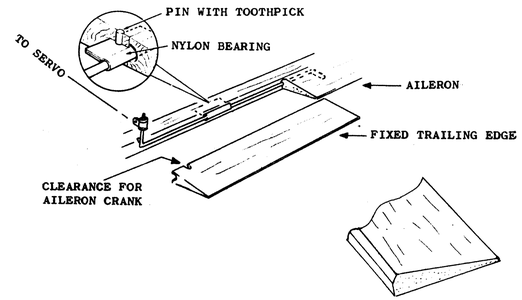
Firstly, establish which version of the Gemini you wish to build, and follow the instructions carefully for that version. All ribs are fitted with building lugs to ease wing construction by giving a flat surface for building. Pin the bottom ⅛" x ¼" mainspar over the plan and pin ribs numbered 40, the moulded leading edge and the shaped trailing edge into place, pushing the ribs into the slots provided Next break out the perforated sections on ribs 41, 42, 43, for the undercarriage blocks. Break out the section in front of the mainspar, if building the two wheel version or the section behind the mainspar for the three wheel version. Do not break out both perforated sections as this will weaken the rib. Next assemble ribs 41, 42, 43, braces 7, 8, 9 and the wooden undercarriage blocks, using the centre rib template to get the correct angle on centre rib 42. Thoroughly cement all joints. Before removing the left hand wing from the plan and building board, fit the top leading edge sheeting and the cap strips. Do not fit the wing centre sheeting at this stage. Remove from the building board and carefully snap off the building lugs.

Rub an oily cotton wad over the wing plan so that it is visible on the reverse side. Now place the centre rib of the partly assembled left hand wing on the wing centre line, block up the wing tip 3" and build the right hand wing in the same sequence as the left hand wing. To complete the wings fit bottom sheeting, bottom cap strips and wing tips. Position ribs 43 to suit your aileron servo, cut out centre rib 42 as needed and fit the servo mounts. Place a 3/16" drill through the hole provided in the bottom undercarriage block and drill through the top undercarriage block. Sheet cover the wing centre section top and bottom. Cement ribs 44 into the plastic wing tip mouldings, allow to dry and trim off the excess plastic. Cement the wing tips to the end of each wing.



Groove out the hardwood trailing edge to allow free movement of the aileron cranks as shown on the top view of the plan. Using epoxy cement, fit the trailing edges to the wing with the aileron horns in place. Ensure that excess cement does not effect movement of the aileron horn. Fibreglass this joint and the wing centre section with fibreglass cloth as shown. This is essential especially if using a bolt on wing.

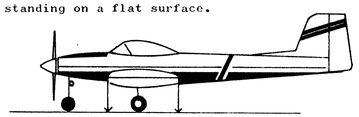
If using rubber bands simply cement two lengths of dowel through the fuselage as indicated and cement thoroughly. If using nylon bolts, hold the wing firmly onto the fuselage and accurately drill two ¼" holes through the holes in former 4 and then through the leading edge and wing brace 7. Drill two more ¼" holes through the trailing edge and through the wing holding block. Now remove the wing and cement two lengths of ¼" dowel into the holes drilled into the leading edge. Epoxy cement the nylon nuts supplied in place if using nylon bolts.



Complete the wing by fitting the ailerons with nylon hinges supplied, but do not cement the hinges at this stage. Before fitting the ailerons it is necessary to chamfer off the leading edge as shown.

STEP FOUR

Cut out the moulded nose ring from the plastic cowl, and cut out the cowl to suit the engine you are using and the position in which it will be installed. The engine may be installed in any position but most models have had the engine mounted at an angle of 45 degrees so that the muffler exhaust will clear the fuselage. Cement former 39 into the engine cowling. The inside cut out of former 39 is designed to help you easily locate the engine mount position. Simply hold the cowl into place against former 1 and pencil a line around the inside of former 39 which will give you the mounting position of the radial mount. Use part number AF 428 for most .30 - .40 engines. Shape the fuselage top block to fit the cowl and fit and shape the fuselage bottom block. Bolt the radial mount into place, screw the cowl to former one, drop the motor through the cowl and bolt it to the radial mount. Retain the main undercarriages with nylon clamps supplied, place the wheels on the axles and solder washers to the end of the axle. Assemble and solder the nosewheel (3 wheel version) so that the centre line of the leading edge is 1/4" lower than the centre line of the trailing edge when the model is standing on a flat surface.



This prevents the model "flying off" after a fast landing. Finally fit the clunk tank, throttle cable, aileron servo and thoroughly check that all control surfaces, hinges, wheels etc. move freely. The model is now ready for finishing.

STEP FIVE FINISHING

Remove all radio equipment, wheels, undercarriage, engine, engine mount cowling and sandpaper all surfaces to a smooth finish. Apply one coat of dope to the fuselage only and paint the area inside the canopy and fit a pilot if desired. Allow to dry, trim the canopy to fit the fuselage and cement into place. It is advisable to paint the inside of the fuel tank compartment with epoxy resin to prevent fuel soaking into the balsa structure.

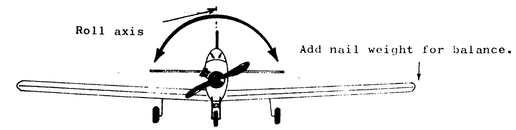
The method of applying the final finish depends on your own choice or previous experience but one suggested method is to cover the wings with "Solarfilm" plastic covering material and cover the fuselage, tailplane etc. with light weight tissue which is doped to the balsa surfaces and finally apply two coats of fuelproof enamel. Re-assemble the model and re-check all working parts.

Check the following before proceeding to the flying field:

(1) That the wing and tailplane rigging angles are as shown.

(2) Set the main undercarriage wheels with a small amount of toe-in, and check that the model tracks straight along the ground

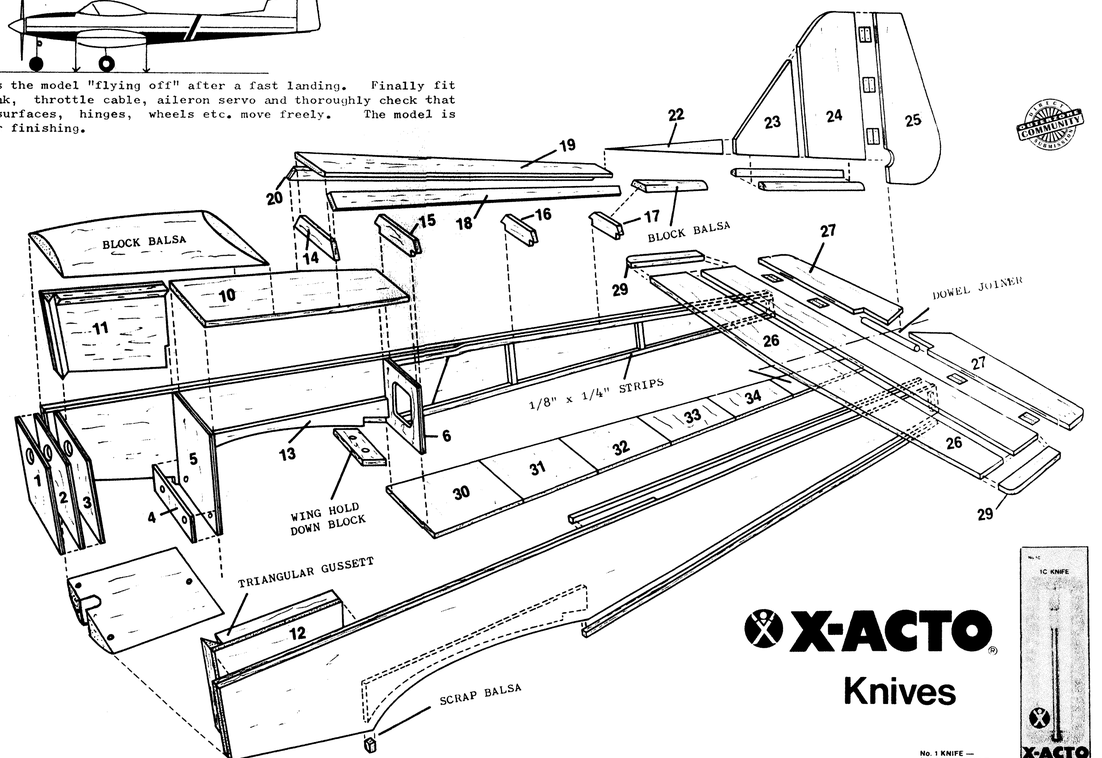
(3) Balance the model about its roll axis. A nail cut to the correct length and pushed and cemented into the wing tip is ideal to achieve this balance



(4) Carry out the radio manufacturers recommended pre flight check

(5) Ensure that the model balances at the point shown on the plan.

Beginners should not attempt first flights without the assistance of an experienced flyer but because of its excellent flying characteristics the Gemini is simple to fly and beginners will quickly learn to handle their model.



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