

Efficient because of excellent streamlining



The finished plane is extremely realistic

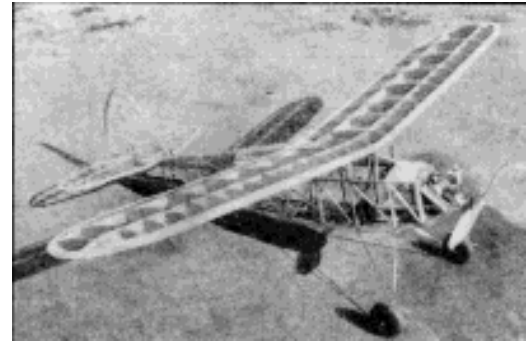
Building the T-D Coupe

A Sleek Gas Job That Is Simple To Build and Noted for Consistent Flights

By THEODORE DYKZEUL



The structure is simple but strong



The uncovered frame showing the mounting of the Baby Cyclone motor with which it is powered

UNDOUBTEDLY many of you have been looking for drawings of a gas model that will fly beautifully, is easily built, can be carried to and from the airport conveniently, and last but not least, does not cost a fortune to build.

As for performance, this model flies at a fair rate of speed, climbs at about a 30° angle and has a glide of about 15 to 1. It is also built easily enough so that an experienced builder of rubber-powered models will have no trouble with the construction. The wing is removable, so that the model can be carried in the back seat of a sedan. Since Airwheels and silk were used, the cost was about \$7.00, less motor. Using wood wheels and bamboo paper, the price can be cut in half.

The model has a wingspan of 64 inches and an overall length of 47 inches. Ready to fly, its weight without cowling is exactly three pounds. The original model has now made 82

flights with absolutely no repairs outside of a few broken propellers and patches on the silk. It is practically crashproof having hit an office at an airport, a windbreak of trees, a concrete watering trough and a barbed wire fence. The pictures of the completed model were taken after the 46th flight.

General Instructions

Before beginning construction, study the drawings carefully and read the entire article.

The wing, tail, and fuselage will have to be drawn out full scale. Use either a pair of dividers or follow the dimensions on the drawing. If a more accurate pattern of the wing tips and curved sections of the tail is desired, lay out 1/4" squares on the drawings and 1" squares on your full-scale drawings.

This plane is designed for and was flown by a Baby Cyclone. This motor is perfectly satisfactory, although other motors may be used with a change of the motor mount.

Take your time and be sure every piece is perfect before proceeding to the next. Be especially careful that the wing and tail surfaces do not become warped.

Use plenty of cement. Go over every joint at least once or twice until you are sure of a perfect cement joint. All balsa used should be of a hard grade unless otherwise stated. Use only spruce where specified on the fuselage unless you wish to pick up pieces if the first test flights do not prove entirely successful or if a solid object looms up.

Last, but not least, use only high-grade materials. Poor or cheap material never has and never will make a championship model.

Tail Surfaces

Begin by building the stabilizer. The material for the ribs is 3/32" x 3/8" strip balsa. Cut the pieces to correct lengths and then punch out each with a 1/4" hole and assemble on the dowel. This is now placed over the drawing. It will be necessary to elevate the leading edge 1/16" and the trailing edge 3/32". Put these in place as well at the center rib which is made of 1/4" x 3/8" balsa. Pin or weight down the entire assembly and cement. Fill in the center section with 1/16" sheet balsa as shown and add the piece, streamlining the top of the fuselage into the tail assembly. The tips can be added now or after the cement has dried and the stabilizer taken from the drawing.

The rudder is built in the same manner as the stabilizer with the exception that 3/16" doweling is used instead of 1/4". Cut the curved outline before beginning assembly.

Leave the rudder and stabilizer dry over night. Now trim both to a streamline shape with a razor blade and finish them with a sandpaper block 00 fine sandpaper.

Make the wire fittings as shown in the detail. Cement one on each half of the top side of the stabilizer and one on each side of the rudder. Be sure to bind with thread. Drill a 1/8" hole in the leading edge of the rudder and Mount a 4-40 nut firmly on each side. This will be used for adjustment.

Wing

Make the entire set of wing ribs. The sizes and number of each are noted on the drawing. Begin by building one half of the wing, laying the bottom front spar, the bottom rear spar, and the trailing edge in place. Now cement the ribs in place. The top front spar, top rear spar, false ribs and leading edge are now cemented in place. The spars are brought straight out and are not curved on the ends. No special rib pattern is given for the second wing rib from the end as the entire wing tip will be shaped later. Cement 3/64", sheet balsa on the back of the front spar and on the front of the rear spar as shown on the drawing, thus making a single spar of each. Fill in the remaining space on the front, spar near the tip with 1/4" sheet balsa, and on the rear spar with 3/16" sheet balsa. Do not forget the 1/8" sheet balsa fillets at the trailing edge.

After the wing panel is entirely dry, take the wing off the drawing and assemble the wing tip. Cement the wing tip in

its proper place. Fill in the remaining portion directly above and below the leading edge with g 3/16" or 1/4" medium balsa. Also build up the wing tip using the same size wood so that it might be shaped easily.

The leading and trailing edges are now roughly shaped as far in as the center rib. Also shape the wing tip, and then with the aid of a sandpaper block, finish the entire portion.

Build the other half of the wing in the same manner. The center section details for joining the two halves are shown on the drawing. Cement 1/16" sheet balsa on the back of the front spar joint and wrapped with thread. Sheet balsa is also cemented on the front of the rear spar joint and wrapped. Fill in the bottom of the center section with 3/32" sheet balsa. Wrap a piece of 32 gauge aluminum, 3/8" x 3-1/4", around the trailing edge to prevent damage.

The dihedral should prove enough, although more can be used if desired.

Landing Gear

Bend both pieces of the landing gear of 1/8" piano wire as shown in detail No. 2. Wrap the joint of the two pieces with small copper wire and solder firmly.

Next make the fittings, noticing that allowance must be made for the curve in each. Drill out 1/16" and then solder them to the landing gear.

The wheels should be about 3-1/4" in diameter, preferably Airwheels.

Fuselage

Unless otherwise noted, all the longerons, vertical and horizontal pieces, wing rest (or top of cabin) and the cross bracing forward of former No. 4, are 3/16" square spruce. The remaining cross bracing is 3/16" square balsa. Do NOT use balsa where spruce is mentioned, as strength is considered more important than weight. Since 1/2" wire nails are used to hold the spruce in addition to the cement joint, it will be necessary to drill each longeron with a drill made of a piece of No. 12 piano wire to prevent splitting.

The two sides are made in the conventional manner. After they are dry, add all the horizontal pieces, this giving a box-like fuselage. Note that the 3/16" x 1/2" pieces at the very front are set back 1/16" to form a mount for the motor plate. Before going further, it will be necessary to attach the landing gear and the rudder attachment plate. These are held in place with 3/8" No. 0 wood screws and cement

Make the top of the cabin, nailing each joint. Now cement and nail spruce formers to T, 3T and 4T, in place. Cement and nail the top of cabin to this. Cut and cement the remaining formers in place and cement on the stringers. Fill in between formers 1T and W. The vee brace at the windshield is made of 1/8" square spruce. The outline of the rear window is made of 1/8" sheet soft balsa. Fill in between the bottom longeron and the first stringer for better appearance, if desired. Cement and bind with thread, a 1/4" dia. x 2-1/4" aluminum tubing at the rear of the fuselage as a rudder mount. Cement a small block at former 8T to hold down the leading edge of the

stabilizer. Fill in the section past 8B with sheet balsa and spruce as shown.

See Detail No. 4 for the tail wheel. Note that the entire fork is one piece of piano wire and is bound on the bottom of the fuselage. It will be necessary to slit the aluminum tubing part way so that the wire may be bent back. The fork is in no way attached to the tubing. Loop the ends of the wire fork to form a hole for the axle.

The wheel is 1-1/4" in diameter and can be made from a sponge rubber ball.

The battery and coil mount is shown in detail No. 3. This is only suggested and may be altered to suit your own particular desire. It is made entirely of 3/16" medium hard balsa. Since the batteries are held in place by rubber bands, cement three hooks made of No. 12 piano wire to each side of the box. Two hooks will be needed for the coil (one will be on the spruce brace on the bottom of the fuselage). Cement all hooks firmly and wrap with thread. Now cement the box in the bottom of the fuselage.

Cowling

Since your motor is air-cooled, the cowling should be used for scale purposes and not for flying. The cowling can be made either of aluminum or balsa wood. The spark plug and needle valve will protrude and the exhaust manifold should be removed. The cowling can be held in place by using dress-snaps.

Motor Mount

The motor mount for the Baby Cyclone is shown in detail No. 1. Although not entirely necessary, it should be made so that the motor will pull 1/2 degree down and to the right. The rear plate is made of 1/16" aluminum and can be reinforced by bolting angle aluminum on the back. DO NOT use heavier aluminum for the mount itself. It is much easier to straighten or replace a few aluminum pieces than it is to repair a fuselage or buy new parts for the motor. Bend and drill all pieces as shown. It will be necessary to file the horizontal pieces in order to fit the crankcase of the motor. Use 4-40 brass bolts and lockwashers to assemble the motor mount. Note the position of the tank and condenser. The mount for these should be cut from the wood mount the motor was on when it reached you. Attach the motor mount to the horizontal spruce pieces by using 3/8" No. 0 wood screws.

Using either clips or soldered joints, put in your medium-sized batteries, coil, external switch, external booster

connections, and wire your entire job. Keep the spark wire away from the motor mount. An automatic timer can be used to open your switch if desired. You may have a little trouble at first reaching or replacing the batteries and coil when your model is covered, but this should not prove difficult.

Covering

See that the wings and tail are perfectly true and not warped in the slightest. If they are, either straighten or rebuild. Using a good grade of silk with thinned out cement as an adhesive, cover the tail first, then the wings and then the fuselage. Tighten the silk by spraying with water and then hold near a fire to dry.

Dope the entire model with two coats of clear dope, and finish up with two or more coats of colored dope or lacquer. Although the color scheme on the original model was metallic (half silver and black) and yellow, any suitable color scheme may be used.

Assembly

Place the stabilizer on the rear of the fuselage and slide the rudder into the tubing. Attach the front of the rudder to the adjustment plate with a long 4-40 bolt. Use a nut and a lockwasher for adjustment. Use a few drops of cement on the tail assembly to prevent vibration. The tail braces are made of 3/16" aluminum tubing and are held in place with cotter keys of aluminum wire. The wing is held in place with a 10 foot piece of 1/8" FRESH rubber. Use a pine or spruce propeller with a diameter of about 13-1/4" and a pitch of 8-1/2".

Test Flying

Balance the model at a point slightly behind the front spar of the wing. Set the rudder in neutral position. Take it out to the nearest airport and put between 1 and 2 eyedroppers of gasoline in the tank. Start the motor, adjust, and let the model take off into the wind, if any. Notice every action the model makes.

A few test flights should suffice in finding the correct balance. If the directions and plans have been carefully followed, You will be rewarded by not only a nice-looking model, but a beautiful, fast flier.

*Scanned from October 1936
Model Airplane News*