

Robin DR 400
By
Troy Build Models
www.troybuildmodels.com



**The following construction suggestion are in addition to the
DVD included in the kit.**

All photos by George Jenkins

Foreword

About This Manual

There is a CD included with the airplane. This manual clarifies some points.

CG

As with most planes, keep everything as far forward as possible for CG reasons. Keep the engine as far forward as the cowl will allow. Put the batteries far forward. Be sure to keep the ignition and Rx batteries separated as much as is practical.

Covering

As with all ARF's, go over the covering to be sure it is stuck down, and is tight.

Fuselage Construction

Remove the cockpit cover and install 2 servos of 90 in oz or more. One for the rudder show to the left and one for the elevator.

Install the elevator push rod to the elevator bellcrank and use blue lock tight on the treads.

Epoxy the end of the pushrod with 45 minute glue. Now install pushrod in from the back of the fuselage forward with the elevator bellcrank to the rear. The bellcrank should be facing to the rear of the fuselage as shown.

Install the flying Stabilizer/Elevator bearing rod in the two plywood holes and through the bellcrank. Line up the treaded hole in the elevator bearing rod and install the locking Allen screw using thread lock.

Slide on the elevator torque rod ball bearings into the wooden holes in the elevator support former and then slide on the wheel collars with the two lock screws using thread lock. Make sure bellcrank is in the center of the bearing.

Now you can install the fin with the rudder attached with 45 minute epoxy into position by apply glue to the inside of the fuselage and the rear of the fuse where the rudder touches.

Install the fin and elevator fairing by carefully fitting it over the elevator torque rod. Make sure the color lines match and there is plenty of clearance for the torque rod and stabilizing rod to move without binding.



Slide the flying stab onto the torque rod and stabilizing rod. Locate the threaded hole on the bottom of the stab and align it with the hole in the torque rod using a pointed object like an ice pick. Install the screw that holds the stab to the torque rod using thread lock. Check the movement after installing the other half of the flying stab.

Install the servo after centering the servo. Turn the clevis on the push rod so that the stab is level when the servo arm is installed on the right side of the servo looking toward the firewall. Use thread lock on the threads of the servo if it has a metal gear.

Rudder Pull-Pull system installation

Thread the steering cable into a clevis after installing a crimping tube over the wire. Loop the cable through the clevis and then back into the crimping tube. Now loop one more time in the crimping tube before crimping the tube onto the cable. This method eliminates wire slippage. Now attach the clevis to the rudder horns. Cross the wires going from the rudder and attach to a metal servo arm by screwing the clevis to the servo arm. Repeat these steps while clamping the rudder in a straight position so it cannot move. Tighten the cables and use thread lock.

Nose Gear Installation

Start by screwing the metal wheel pant reinforcement strap with the screws provided. Wheel pants really take a beating and cannot be too strongly mounted or reinforced. Install the steerable nose gear strut inside the fairing and then slide it inside the wheel pants.

Place an axle in the side farthest away from the gear strut and insert it through the wheel before inserting it into the land gear strut. The axle will stick out both sides of the wheel pant past the metal reinforcement straps.

The wheel is held in place with keeper pins that you can install with long nose pliers. Install a locking nut on the end of the axle.

Install the nose gear pivot block to the firewall with the screw provided.

Install a ball joint in the top of the nose gear strut for steering and a ball clevis that goes through the firewall to the steering servo.

Install the metal gear steering servo on the 2nd level for alignment with the steering push rod.

(You may want to use a shock absorbing servo arm used in electric race cars to help with hard landing on the nose gear.)

Hook the steering arm to the servo arm and align the wheel.



Steering Servo

Install a ball joint in the top of the nose gear strut for steering and a ball clevis that goes through the firewall to the steering servo. Install the metal gear steering servo on the 2nd level for alignment with the steering push rod. *(You may want to use a shock absorbing servo arm used in electric race cars to help with hard landing on the nose gear.)* Hook the steering arm to the servo arm and align the wheel.



Flap and Aileron installations

Glue the point hinges into the flaps using 45 minute epoxy. Put Vaseline in the hinge joint to keep the epoxy out of the hinge joint. Install the aileron servos into the servo hatches. Pull the servo extension wire out of the wing toward the center section. Use plug locks! Install into wing using screws provided.

Align the control horn with the servo arm and tape or clamp the aileron in the center position. Install the aileron push rod to the servo and to the control horn. Screw the control horn in place.

Installing the Main Landing Gear

Attach a scrap piece of cover film far enough away from the wheel pans fairing so you can mark the mounting holes and still be able to mark the mounting hole on the wheel skirt. Once you have located the holes

Install the main landing gear strut using the 3 bolts provided. Now slide the landing gear skirt over the strut and mark the mount holes.



Once you have located the holes, install the main landing gear strut using the 3 bolts provided.

Now slide the landing gear skirt over the strut and mark the mount holes.

Install the wheel pants and locate the position with the axle screws into the strut install for a exact location before marking the mounting holes for the skirts.

Mark the mount holes with a felt tipped pen, remove and drill the mount holes.

Install the wheel pant reinforcement strap to both sides of the wheel pants for the main gear.

Slide the gear fairing over the main gear strut and then slide the wheel pant over the strut and line up the wheel and the axle with the holes in the wheel pants.

Put wheel into the wheel pants and slid axle into wheel then screw it into the main gear strut till it sticks out on the other side of the wheel pants.

Now install the lock nut on the axle and tighten.

Install the locking pin on the axle with a pair of long nose pliers to keep the wheel in line with the wheel pants opening.

Make sure the wheels turn freely and that the shock absorbing landing gear works as well.

Landing light lens cover

Install the clear lens for the landing lights on the wing using 4 screws. *(You may want to consider some LED lights to be triggered by the retract servo for a more scale appearance with landing.)*

Fitting the Wing to the Fuselage

Slide the aluminum wing tube into the fuselage after trial fitting the tube into both wings first to check on ease of installation.

Insert the servo wires into the fuselage and then fit the wing all the way into the fuselage making sure the safety mounting screw holes line up. Now install the two safety/mount screws into place using a magnetic phillips screwdriver. Use a washer on the screw head to prevent wood penetration. You can use some thread lock here too.

Engine Installation

Extend the center line markings for the engine mount marked on the firewall that is off center to compensate for the right thrust of the engine. Measure the engine mounts and mark the firewall accordingly.

Measure the distance from the firewall to the front of the cowl allowing 1/4" clearance to the back of the spinner. Determine the length required for engine mount extensions. Make extensions using 3/4" dowel rod and long bolts, or purchase aluminum stand offs.

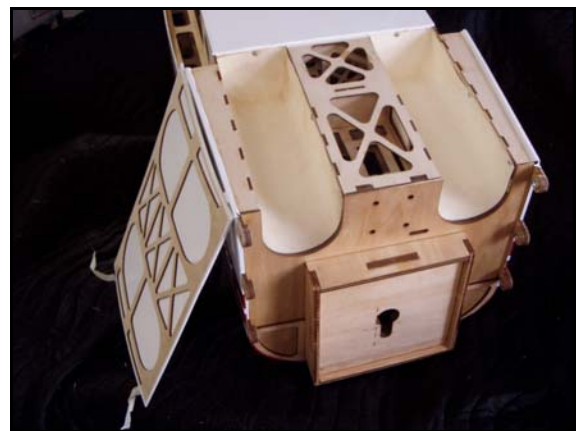
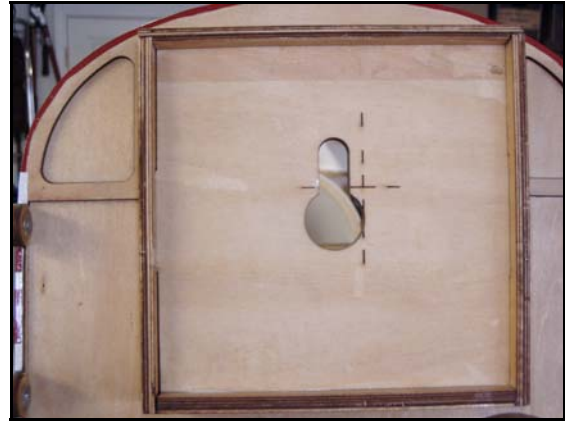
The cowl is about 11" long with a 3/8" overlap onto the fuselage. *(You may need to remove the Carburetor from your engine during this process so there will be no interference with the trail fit of the cowl.)*

Drill the holes out for the engine mounting bolts with a 1/4" drill and check alignment. Install the engine using thread lock.

Trial fit the cowl.

Align the mounting holes for the cowl and insert the mounting screws. Use a rubber washer on the screw head to avoid the enlargement of the hold due to vibration.

Remove the cowl and install the muffler on your engine and cut out the necessary area for the exhaust.



Installing the tank

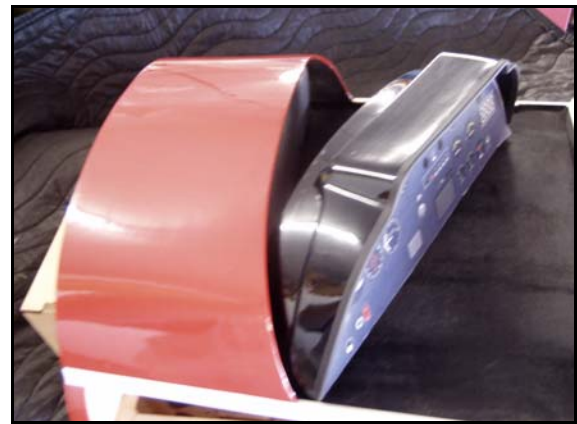
Use a 32 oz tank. The overflow line should exit out the bottom of the cowl and the fuel dot on the side. Secure the tank in place with Velcro straps provided. Use safety wire on all connections. *(Fuel proof the interior of the tank area with thin epoxy before finalizing the tank installation.)*



Installing the Cockpit and Canopy

Use 1/3 scale pilots for your Robin. You can glue the pilots in using E6000 industrial glue available from TBM or attach them with screws from the bottom of the fiberglass cockpit. Make sure to secure the cockpit with screws into the blind nuts using thread lock on the threads. Glue the instrument panel into place with E-6000 glue.

Glue or screw the canopy in place onto the cockpit. If you glue the canopy with the E6000, it is less likely to distort from over tightened screws. E6000 glue will only attack Styrofoam and is easily removed by rubbing off the excess with your finger until it forms a ball and can be picked off the paint areas where you do not want glue to appear. E6000 dries clear and flexible and can be removed with a sharp #11 blade. Tape the canopy in place and let it rest over night for the glue to dry. *(Warning: Do not use any CA glues to attach the canopy due to fogging of the clear canopy when the CA glue kicks.)*



Balancing the Model

Remember, tail heavy airplane fly once, nose heavy airplane fly forever! Make use to balance your model on the center line of the wing tube with a slight nose down attitude dry, with no fuel in the tanks. Add what ever it take as far out on the nose as possible till it comes in where it is suppose to. On your first flight, note if you had to keep trim on flying with down elevator or Up elevator and you will know if you are right on the money with the CG or not.

Movements

Elevator and ailerons should be a 12% and the rudder at 30% to start.

Getting ready to fly your Robin

Always do a range check with out the engine running and with the engine running.

Check the correct direction for all surface so the right is right etc.

Make sure the model tract straight and true with pushed forward. Now to some slow speed and high speed taxiing before you first flight.

Be ready to give the model right rudder at take-off until the rotation into the air.

Test run your engine so that the idle is reliable and there is no hesitation to high speed after sitting and idling for 3 minutes.

Use the prop recommended by your engine manufacturer for the best RPM and performance from you engine.

Use safety clips on all servo connections and secure all clevises to flying surfaces.

After you first flight, check everything to see if anything is loose or missing. If you hear a vibration or flutter on a surface, land immediately!

Remember nothing that is wrong on the ground will improve in the air.

