

# Pilot

## 40% Extra 300



**Wing Span: 122 in(3.1M)**

**Wing Area: 2790 sq in(18005sq cm)**

**Fuselage Length: 115 in(2.9M)**

**Weight: 37.9 lbs(17.2kg)**

**Engine: 150~170CC**

**Note: All construction photos by: Stephen Cinch**

**Note: The photographs in the manual do not color match your plane but the construction is the same for all RC Pilot Models. New pictures coming soon!**

## Fore Word:

Every attempt has been made in this manual in word and picture to help the modeler assemble this model, it is for advance modelers with advanced knowledge of the needs and strength needed to complete a reliable and aerobatic plane.

If you do not have the skills ask a fellow modeler to help you with this model assembly especially if it is your first large scale project.

Every engine you select posses a new adjustment of the firewall placement and balance requirement due to the weight of the engine and how it effects the CG (Center of Gravity) Therefore, you may need to reposition the firewall by removing the screws from the aluminum angles, re-drill the mount holes and adjust to fit the length of your engine in relationship to the cowl and the clearance needed to clear the back plate of the spinner you have selected to use. Make sure to measure the original angle of the firewall for proper right thrust.

If you need help, don't hesitate to email us your questions by going to our web site: [www.troybuiltmodels.com](http://www.troybuiltmodels.com)

## Construction and Assembly Manual for Extra 300

### Engine Installation

Start by installing the engine making sure that the mount is in the exact location by extending the lines from the alignment “+” marked on the firewall. This is very important or you cowl will not line up with the engine. It is a good idea to temporarily attach the engine to the firewall with self tapping drywall screws and trial fit the cowl before permanently attaching the engine. Paint the entire torque box and surrounding area with 15 minute epoxy that has been thinned 20% with alcohol for fuel proofing

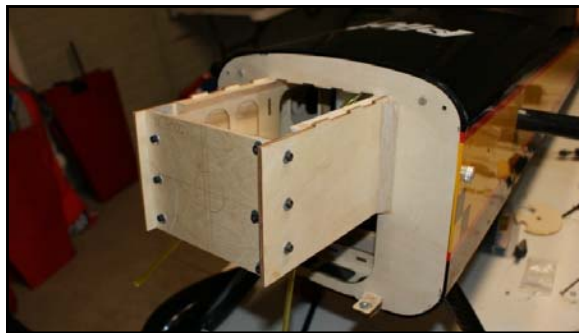
Measure the distance to the firewall to the front of the cowl. Add stand offs to achieve the proper distance. Use of washers or aftermarket stand offs is recommended. Use 1/4 X 20 socket head cap screws backed up with 1/4” fender washers using blind nuts and nylon nuts. Use blue Loctite on all screws. *(You can build out using epoxy plywood Laminate if you prefer, but it adds weight)*

By opening up the bottom of the plane and making cooling exits help you access the area to mount the muffler and help get rid of the excess heat generated.

Now is the time to install the blind nuts for the landing gear.

Now you can install the Exhaust manifold, muffler and exhaust pipe using 2 muffler supports that you can epoxy in place supported by triangular hardwood supports. Bend the pipe (if necessary) by having a friend help you.

Make sure the manifold is tight and use Red Loctite on all engine bolts after reinstalling the engine and muffler from fitting the cowl. Attach the exhaust pipe to the fuselage at the exit point to avoid any movement in the exhaust system what-so-ever. Remember to fuel proof the inside of the muffler area with thinned epoxy as well since there will be some exhaust leakage.



### Cowl Installation

Using card stock or file folder thin cardboard make the necessary cut outs for the engine head and muffler. Make sure to tape the template back far enough with masking tape that the cowl can fit. Remove the engine & muffler. Now slide on the cowl, screw it in place and mark the cowl with a black grease pencil. Remove the engine area using a large Dremel sanding drum trail fitting as you go to make sure of the clearances.

You may also want to install baffling inside the cowl at this time to direct the intake air over the cooling fins for the engine. Use rubber washers when mounting the cowl to avoid the metal screws from eating bigger holes due to vibration.

### Landing Gear

Install the landing gear with the bolts provided and use blind nuts already installed and use blue Loctite on the mounting bolts.

Now install the landing gear axles making sure that you file a flat spot on the axle for the Allen screws to seat in place. Use blue Loctite on the Allen screws.

Line the wheel pants up with the ground by slipping them over the axle and supporting them from the rear for the proper clearance.

Drill the holes for the mounting bolts and then removed and install the blind nuts.

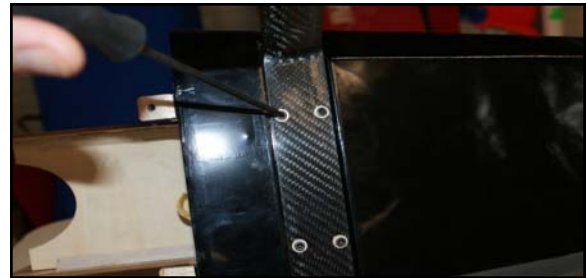
Now mount the wheel pants with the bolts and use blue Loctite on the threads.

### Tail Wheel Installations

Drill holes in the hardwood tail wheel mount and install the blind nut through the opening in the rear of the fuse.

Install the mounting screw for the tail wheel using blue Loctite on the threads.

Install the hatch over the opening in the rear of the stab with 4 screws



Bolt the tail wheel bracket in place and attach the steering arm wire to the pivot as shown using Loctite on the Allen screws. The steering arm can be inserted into the rudder steering tube at the time of rudder installation.

### Rudder Installation

Make sure to apply Vaseline to the rudder hinges to prevent the epoxy from getting in to the joint. Make sure to allow room for the 30 minute epoxy to penetrate the hinges.

Install the epoxy rudder horns and glue in place but make sure the holes line up by installing the rudder steering bolts in place before the 30 minutes is up and the epoxy has cured.

Finish up the rudder installation by installing the rudder servo with the Air Wild metal servo arm and the cable. Make sure the arm movement is just slightly smaller than the arms on the rudder to prevent a slack cable. Loctite the cable turn buckles and secure the steering cables with a loop into the crimping sleeves.

### Installing the Stabilizer

Install the elevator servo using a 1 1/2" metal servo arm from Air Wild. Make sure to use Loctite on the machine screws that hold the arm onto the servo shaft.

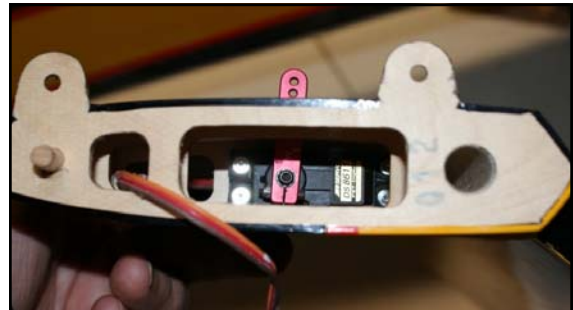
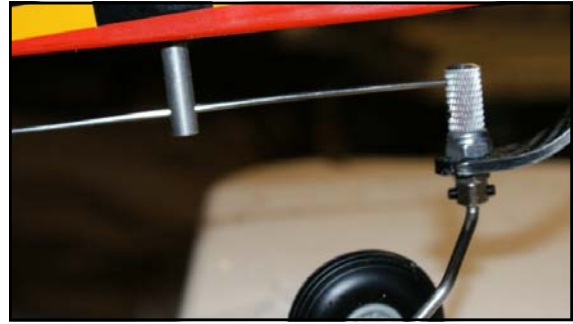
Now install ball links on the servo arms with 4-40 bolts backed up with nylon lock nuts using Loctite in the treads.

Check the clearance and the throw so there is no binding of the arm.

Now install the elevator horn in the elevator using 30 minute epoxy and align the holes for the servo push rod at the same time before the glue sets.

Now mount the elevator onto the stab making sure you use Vaseline in the hinge points so the glue will not stick the hinge shut.

Now install the 4-40 push rod and ball joints after making sure the servo arm is dead center.



Install the stab mounting tubs and slide the stab in place making sure to hook up the servo plug to the 24 gauge servo extension wires and clip the plugs together using safety clips.

Install the servo mount bolts with a washer, lock washer and Loctite the blind nuts.

Now that the stab, tail wheel and elevators are in place, check the alignment of the elevators and rudder for throw and use sub trim to make sure the elevators are perfect. Use about 30% expo on the elevator and 70% on the rudder.

### Wing assembly

Install the aileron horns in place with 30 minute epoxy. Align the holes in the horns with the ball joint mounting screws. Install the servo after pulling the servo extension wire in the wing. Install a 1" metal servo arm on the servo and Loctite it in place on the mount screw. Install the 4-40 push rod and the horn.

Check for movement and center on the servo for the aileron to be in a level resting position.

Check to make sure you have the servos in a reverse manner so ailerons work properly.

Put the amount of movement recommended and the end of this instruction manual.

The CG is located about the center of the wing tube. Once you fly the plane, change the CG by shifting the batteries to suit your flying style.

Typical throws are 15 degrees of elevator and aileron and 30 degrees of rudder.



## Set up for 40% Extra 300

**CG at the center of the wing tube.**

**Aileron Movement: Low rate-15 degrees up and down**

**High Rate-30 degrees up and down**

**Rudder Movement: Low Rate-30 degrees left and right**

**High Rate-45 degrees left and right**

**Elevator Movement: 15 Degrees up and down**

**High Rate-25 Degrees up and down**

*Start at 40% exponential in all surfaces and adjust to your type of flying demands.*



## COMPONENTS NEEDED TO COMPLETE THE KIT

Be sure to have all the parts on hand to hasten installation

- Engine: 150—210 cc gasoline engine
- Muffler: Pitts style muffler
- Propeller: DA150 cc 32 X 10 —DL-222 cc 32 X 10
- Spinner: Carbon Fiber Spinner included
- Clevis: two Sullivan #562 4-40 snap links for choke and throttle
- Pushrods: two Sullivan #584 graphite push rods
- Throttle and choke servos: 30oz-in (2.2 kg-cm) minimum
- Aileron and Elevator servos: 4 total 120 oz-in (8.8 kg-cm) minimum
- Rudder servo: one 180 oz-in (13.2 kg-cm) minimum
- Aileron and Elevator servo arms: 1.50"
- Rudder servo arm: 3" not offset. Cross rudder wires.
- Elevator servo extensions: 24"
- Aileron servo extensions: 12" in wing, 3" in fuselage
- Batteries: 1400mah for ignition. Two 2600mah for Receiver.
- Regulators and Switches: as required

**This is not a Toy!** This R/C ARF kit and the model you build from this kit is not a Toy!

It is capable of serious bodily harm and property damage. It is **YOUR** responsibility as your alone to assemble correctly, properly installing all R/C components and fling gear (engine, tank, radio, pushrods, etc. and to test the model and fly it only with experienced, competent help from an experienced pilot using commonsense and in accordance with national and international safety standards as set forth by many Model Airplane Associations. It is suggested that you join such an organization and adhere to there rule for safety of fellow pilots. If you are just starting in R/C this in not the plane for you to learn how to fly. This is not a beginners airplane but designed for advance pilots who know aerobatics. If you need help contact a local hobby shop and purchase a trainer. Join a model airplane club in your area and take lessons from a veteran R/C flight instructor.

**Limits Of Responsibility:** We accept no responsibility for crash damage. It is impossible to determine for certain whether crash damage was the result of a radio system failure or pilot error. We accept no responsibility for crash damage occurring during the use of a radio controlled model. We accept no responsibility for improper installation of our products.

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