



Cox P-47 Thunderbolt

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Smaller, Ready-To-Fly (RTF) airplanes have become fairly common in our sport these days. Most are electric-powered and fly fairly well. But most of them look something like a Lake Amphibian with a pusher motor mounted on the rear of the top fuselage with some kind of "boom" extending aft from there. These aircraft are excellent for their purpose, teaching new pilots to fly in less than formal, i.e. RC airfields, environments.

But once a new pilot has gained some experience, that nagging desire to fly something more "real" always surfaces. By "real" most of us mean "[scale](#)". Scale airplanes are miniature versions of a full size airplane. And for some of us, scale airplanes mean Warbirds. There are many Warbirds, even including Cessnas and Piper Cubs. Military Cubs flew artillery and passenger service in World War II. Cessnas did that and flew target Identification missions in Vietnam. Imagine going to war in a Cessna 172 the O-1 or a Cessna 337, the O-2 while getting shot at by heavy AA batteries? They built *real* pilots in those days!

However, Military scale also means WW II fighters. In fact, to many new pilots the "Heavy Iron", as these fighters are called, are what attracted them to model aviation in the first place. But building even Almost-Ready-to-Fly ([ARF](#)) Warbirds requires work and building skills. Most WW II fighters are outside the realm of Park flying, requiring a regular RC airfield for safe flight. These ARF's are also on the expensive side meaning that a new pilot risks extra time and money to fly his favorite fighter.

But Cox has a better idea. How about a truly Ready-To-Fly small electric fighter requiring nearly nothing to get flight-ready and costing under \$90? In fact, Cox has six small ARF and RTF fighters ready to terrorize most any park or school yard. Three are ARF-only aircraft (for only \$20) including the Japanese Zero, the Me-109 and the FW-190 (see <http://www.coxmodels.com/products.asp?dept=79>) while three others are either ARF or RTF airplanes.



Photo 1



Photo 2

The Curtiss P-40B Warhawk of Flying Tigers fame, the fast Chance-Vought Corsair and the rugged Republic P-47D are complete RTF airplanes. In fact, these three Cox airplanes are about as RTF as RTF airplanes can be. Totally pre-built and including the radio and charging systems, either aircraft requires only about 5 minutes for assembly.



Photo 3



Photo 4

Photo 3 shows the P-47 as it is packaged. The vertical fin and horizontal stabilizer are already attached to the fuselage and all control surfaces and rod linkages are connected. As can be seen in photo 4, only the propeller needs to be attached. Cox also provides an extra propeller but we found that the first one has proven, so far, impossible to break even on a paved surface. Even if accidentally bent, the propeller is easily straightened by hand



Photo 5

Photo 5 above gives an idea of the Cox P-47's size. The picture shows it resting on the 81-inch wing of a Hangar 9 150 Thunderbolt. The Cox P-47 may look a little small in comparison but then it can be flown in small fields, parks or at just about any location while the big P-47 must be flown at a large RC field and preferably with some assistance. The Cox P-47 is just ideal for flying from very small areas. In fact, this small fighter can even be flown from your driveway if there are no trees or other houses, except yours, in the vicinity.

The little fighter is now ready for its first charge. Once the charger's red light blinks, the battery pack is ready to go. Disconnect it and check out the control surfaces. The elevator should move 3/16 inch, both directions while the rudder should have 5/16 in. movement. Make sure the clear

hinges are in place and secure. If not, use 1/2 in. clear packing tape to repair any damaged hinge sections.

The Thunderbolt's 130-size brushed electric motor is quiet and fairly powerful. Its power is supplied by a 6-cell, 7.2 volt, 220 mAh Nickel Metal Hydride (Ni-MH) battery pack that allows about 8-10 minutes flying time after about 5 flights for break-in. The ESC is set to shut the motor down once the voltage drops to 0.9 volts per cell (4.8 V total) to allow full radio control for a safe landing. The normal servo voltage supplied from the ESC's Battery Eliminator Circuit (BEC) is 5 volts which provides the tiny servos with constant output speed and power during the entire flight.



Photo 6

The 5-amp Electronic Speed Control (ESC) is built into the Cox ICON receiver and has an on-off switch located next to the charge jack under the canopy. This switch is a necessary feature since the battery to motor ESC is hard-wired into the receiver/ESC. As the battery remains always connected to the ESC and motor, there is a very small, but constant, current drain. If you are not flying the P-47 often, it is a good idea to charge the battery about once every two weeks. This protects the battery from being overly discharged during storage.

The Cox P-47 is constructed from a hard, durable type of molded foam. It has held up well during repeated flights and a few "hard" takeoffs. While speedy in flight, the airplane lands so slowly that it is impossible to have a "hard" landing with it.

The 17.75-inch long fighter has a 20-inch wingspan. While fairly quick in flight, the airplane can slow to a fast walking speed (about 8 mph) for landing and spins. Its very light weight and under-cambered airfoil wing makes this slow flight possible.

The two Cox ICON-RC servos weigh only 6 grams each, installed, and have a 10 in. oz. output. With the combination ESC-receiver and such light servos, it is no wonder that the entire P-47, ready to fly, weighs just 4.9 ounces.

The Cox ICON 72 MHz FM transmitter is a 3-channel unit with the throttle control located on the transmitter's rear case. It is in a good position and easy to reach. The single control stick on the front manages both elevator and rudder. These two channels feature servo reversing but there is none for the throttle control. The transmitter also has V-tail mixing for aircraft equipped with a "V" tail like the old Beechcraft Bonanza. It is not used on the P-47 but could be useful if the radio system is eventually transferred to a V-tail glider.

While set up for 8 "AA" alkaline batteries, the transmitter may also be powered using 8 rechargeable Nickel Cadmium (Ni-Cd) batteries. The transmitter has a connecting jack for a Ni-Cd charger. The pilot will have to supply the 8 "AA" Ni-Cd batteries (available at Radio Shack type outlets) and the 9.6-volt charger. Unless you plan to fly the Thunderbolt many times a week, using the alkaline batteries is probably OK. After a month of flying, this P-47 is still on its first set of alkaline transmitter batteries.

The transmitter has three indicator lights on the front case. When all three lights, red, yellow and green, are lit the transmitter has full power. Yellow and red lights only mean it is time to change or charge the batteries. A red light only means no flying until the batteries are replaced or charged.



Photo 7

Charging the Ni-MH flight battery takes about 15 minutes using the supplied 12-volt peak detection charger. The charger works only from a 12-volt source using the traditional "car plug" connector. If you want to charge the Thunderbolt at home, you will need a portable 12-volt power source like the one in photo 7.

Getting Flight Ready



Photo 8



Photo 9

Assembly requires just two steps. These steps, plus getting the airplane flight ready, are covered in detail in the instruction manual (photo 8). There is also a separate instruction booklet for the radio system.

But some care is needed on the first assembly step. The propeller, as you can imagine, is a tight fit onto the motor shaft. If it were not, slippage would be dangerous at worst or the propeller would not turn at best. But pressing it into place is possible. Because a little extra pressure is needed here, you **MUST** support the motor from behind and inside the fuselage. Put a finger inside the fuselage and up against the back of the battery pack. The pack is positioned against the motor's rear so pressing on the battery pack will keep the motor in place during propeller attachment.



Photo 10

The wing uses a unique snap-on attachment system. Make sure the servo wires are clear of the wing saddle and press the wing onto the fuselage as shown in photo 10. It will click into place but can be easily removed by applying pressure under the leading edge just outside the fuselage. The receiver/ESC is left loose inside the fuselage in case the CG needs adjustment. Just slide it as far forward as possible before installing the wing as that is its best position for the first flights.



Photo 11

The Center of Gravity (CG) is located 1 1/4 in. back from the wing's leading edge *at the fuselage*. If the Thunderbolt is slightly nose heavy, well... don't worry about it. Fly it first and then make adjustments depending on your skill level and comfort factors. Since this is an RTF, it is not possible to get too far outside the CG range. However, any tail-heavy condition must be fixed before flight. Cox supplies some modeling clay should nose weight be required (doesn't that bring back old memories?). Insert some clay inside the fuselage just behind the battery and then make sure the receiver/ESC is as far forward as possible against the clay.

Our P-47 balanced almost perfectly right from the start. It was just slightly, *very* slightly, nose heavy but not by enough to matter. So, we went with it as delivered. With all the checks made, the battery charged and the motor tested, it was flying field time.



Photo 12



Photo 13

The Cox P-47 is an attractive airplane and looks great. The camouflage is realistic but remains easy to spot in the air, even for my old eyes. The airplane might be a little small for the safety tail hold downs used for larger models (photo 13), but then its smaller size offers a great deal more versatility. The Thunderbolt can be packed in the car without taking a lot of space and then flown in any reasonable, at least 150 ft. diameter, clear public field you may happen to be passing at the moment. Not many other Thunderbolts can say the same.



Photo 14

Many small fields will be surrounded by green things like trees and bushes. Photo 14 illustrates how well the camouflaged P-47 contrasts with natural green. Even when flown with a green or brown colored tree back drop, the P-47 remains easily visible.



Photo 15

After touting the Thunderbolt's small field advantage, the flight photos were taken at AMA's 1,200 acre headquarters flying site. If you have not flown at this model airplane Mecca, include a trip in your future plans. AMA has numerous Control Line circles, free-flight areas and three RC flying sites plus numerous RV and tent-only campgrounds with some facilities. This picture was taken at RC Site No. 3 which features 30-degree crossed twin runways about 600 ft. long and 100 ft. wide. While a little large for the Thunderbolt, the airplane had no problem handling the extra space which came equipped with a 10-12 mph wind.



Photo 16



Photo 17

The Thunderbolt requires a firm push to hand launch. No running is needed but the airplane should have a fast launch aimed about 20 degrees upwards. The upwards push allows the pilot time to regain the transmitter controls well before the airplane gets too close to the ground.

The P-47 launched well and climbed into the air. Climb rate is brisk but not overly steep. This airplane flies "on the wing" rather than "on the propeller" meaning that the pilot must manage airspeed using elevator control and pitch angle. There is enough reserve power to make up for excessive control inputs but airspeed should be kept above about 20 mph for best responses.



Photo 18



Photo 19

The Thunderbolt turns well but not too quickly. Banking to 45 degrees required about 1 second at cruise speed and about 2 seconds at slower airspeeds. This is good for low-time pilots as it prevents banking too much, too fast. Elevator response was always immediate and precise. The Thunderbolt is not a trainer but is easy enough to fly that any pilot past the basic trainer stage should have no flight problems. Remember to manage airspeed, altitude and attitude.



Photo 20



Photo 21

Managing airspeed means keeping the airspeed up before attempting a giant barrel roll. Pitching the airplane up about 30 degrees before rolling allows it to maintain near level flight exiting the roll. However, as will most rudder-controlled airplanes, the P-47 stops rolling when inverted if "down" elevator is applied and just starts downwards. This means the airplane transitions from rolling to pointing towards the ground. Usually a roll attempt ends up as a split "S" maneuver; a half-roll followed by a half inside loop to level flight. Extra rudder throw was needed for the roll attempt. But sometimes the P-47 will perform a great barrel roll that is more than worth the extra piloting effort. The Thunderbolt's barrel roll is pretty to watch.



Photo 22



Photo 23

Loops were easier to perform. Diving first for excess airspeed was mandatory but the loops could be as large as 40 feet in diameter. However, the P-47 is designed to be stable enough for low-time pilots. Therefore, it tries to right itself back to level flight when going over the top of the loop if the airspeed is allowed to drop too far. Having sufficient airspeed at entry or adding rudder early enough can stop this process. But late rudder application means the loop mutates into a beautiful Chandelle. Once the compliments on the Chandelle start, just pretend that of course, you meant to perform this more difficult maneuver from the beginning.

Unlike its full-size predecessor, the Cox P-47 Thunderbolt is a rather speedy airplane in level flight. Half-throttle flight speeds are above 40 mph (not measured but an experienced estimate). At full throttle, the Thunderbolt is flying above 50 mph and in power dives is probably bouncing right up against the AMA Park Flyer limit of 60 mph.

But all during its flight, the P-47 remained easy to control and totally honest. Stalling the Thunderbolt was a non-event. The airplane just glides even while the pilot holds full "up" elevator. The stalled oscillations are there but very slight and the airplane could be safely landed in this fully stalled condition.

Regular spin entries, power off and full "up" elevator did not produce any spins. Full power stalls with full rudder input did provide a 1-turn (almost) spin but then the airplane started flying again and transitioned to a spiral. This is good beginner performance. Letting go of the controls meant the P-47 returned to normal flight.



Photo 24



Photo 25

The P-47 slowed down well for landing. As the airspeed drops, rudder control slows down allowing the pilot time to plan the approach. However, about 2 seconds before touchdown (photo 24), the wings should be level. There may not be enough time to level them before touchdown as the rudder response is slow at this point. However, the slow response rate also means that newer pilots will not be able to make sudden banks at this low altitude which is a very good thing. The airplane already knows how to fly better than we do. Just level the wings about three feet high and the Thunderbolt does the rest.

The Cox P-47 Thunderbolt is designed as a very small field, scale Park Flyer. While not designed for advanced aerobatics, it still challenges the pilot to make it perform to its potential. It will do so with proper airspeed and attitude management. High-speed fly-bys are impressive and very realistic in appearance. The high-speed fighter impression is made even more impressive since the fly-bys can be flown quite close to the pilot and yet be safe. Flying an aircraft weighing less than 5 ounces with a 130-size brushed motor turning a very flexible propeller means that passes about 50 ft. away from the pilot are relatively safe and look great.

Best yet, this totally Ready-To-Fly airplane, complete with 72 MHz transmitter, flight battery, charger, Receiver/ESC motor and twin 6-gram servos costs less than \$90! Less than \$90 to have a scale fighter that performs well and yet can be flown just about anywhere is an uncommon buy in the sport.



Photo 26



Photo 27

Above photos courtesy of Cox Website

At that price, it might be possible to assemble a whole air force. In addition to the Thunderbolt, Cox also offers an RTF P-40 Warhawk and a Navy Corsair. Both are fully equipped like the P-47 and cost the same \$90. I wonder if this airplane can tow a paper streamer for some combat? I will have to look into that!



Photo 28



Photo 29



Photo 30

Above photos courtesy of Cox Website

If you are more adventurous or already have small airplane equipment, Cox also offers three other fighters as Almost-Ready-to-Fly aircraft. The Me-109, FW-190 and the Japanese Zero are the same size as the P-47 but you will need to add all the equipment including a motor. These ARF aircraft cost less than \$20 each.

For Scale Park Flying at its best, try the Cox RTF P-47 Thunderbolt fighter. For more information, go to: [website](#)