Model Aviation's Sport Aviator
The e-zine for the new model pilot

Hobbico's FlyZone Aero Voyager

By Frank Granelli

Everyone knows that getting quickly into the air with an RC Park Flyer is easy. These small, electric powered model aircraft have opened the world of RC model aviation to anyone who wants to give it a try. Building skills are not needed at all and piloting skills can be minimal. Well, at least near minimal. Anyone can just grab any park flyer model off the shelf, get it ready to fly in about 10 minutes, charge the battery and go out and fly those perfect loops, rolls, Immelman turns and all the other aerobatics the pilot visualized when the purchase was made. Nothing to it, it's easy.

At least most of the box labels make it seem that way. In reality, so many park flyers are underpowered, cannot be flown in a breeze over 10 mph and lack some basic flight controls that flying them can be a challenge for an experienced RC pilot. Many are harder to fly than a 40-powered RC trainer. To make matters worse, new pilots can take the "park flyer" label seriously and fly these aircraft in small, confined areas like parks and parking lots where there are too many "civilians," too many parked cars and buildings close at hand.

The usual result is a short, unhappy piloting experience and a really busted up airplane. Can some extremely talented new pilots, with several RC simulator hours, fly park flyers successfully? Yes, a few can. But most can't. Why? Let us count the ways:

1. Many are underpowered and cannot quickly climb to an altitude high enough to allow piloting mistakes.
2. Many lack basic flight controls like aileron and, most importantly, elevator control.
3. Wind penetration is extremely limited and retaining full control in winds over 10 mph can be extremely difficult.
4. At first launch, flight trim is almost never neutral, requiring quick trim adjustments while the pilot holds the stick off-center to compensate. A daunting task for a new pilot.
5. Because power is limited and wing loading fairly high, many park flyers fall out of a turn when the bank angle reaches 60 degrees or more requiring altitude and piloting skill to recover.

6. Flight times are limited making learning more difficult.

Many pilots might be surprised at number 5. But most Ready-To-Fly (RTF) outdoor park flyers have wing loadings in the 13 to 16 oz. per square foot range (indoor park flyers do have light wing loadings, often under 10 oz. per sq. ft.). That is not a truly light wing loading when a 60-sized trainer like the Alpha 60 has a wing loading just over 17 oz. per square foot. Plus, park flyer wings have a narrow cord, the width of the wing front to rear, and taper sharply near the tips. The sharp taper helps maintain roll control in wind but does tend to make the roll response a little “twitchy,” a highly technical term meaning that the pilot has to continually work to maintain level flight in all but the calmest conditions.

The point is that even the most forgiving electric outdoor park flyer still needs an experienced RC pilot at the controls for the first few flights. Once the box is opened, all manufacturers point this out in their instructions. Sport Aviator gets this question so many times that we wanted to answer it at length here and will repeat it often in upcoming outdoor park flyer reviews.

Hobbico not only stresses the need for a good flying site, having an experienced instructor and flying only in light winds in its directions. To Hobbico’s credit, the included DVD also stresses these points until there can be no misunderstandings.

Photo 1 Photo 2

But, what about the FlyZone Aero Voyager by Hobbico? While still requiring an experienced pilot for the first few flights, (instruction after that would still be a good thing), the Aero Voyager makes a serious attempt to function as a complete RC trainer and first airplane. The Aero Voyager solves many of the six points listed above.

The Aero Voyager is powered by two electric motors (photo 1) that minimize problems 1 and 6 above. Each motor provides a good amount of thrust. Working together, they allow the airplane to quickly reach 2-300 ft. high. The motors are angled inwards to help stabilize the aircraft at higher power settings. Since little time at high power settings are needed to reach altitude, at lot of battery capacity remains for extended training flight.

Photo 2 shows that the Aero Voyager has a larger 42 in. wing span. The wing is shaped so that the large 5 in. wing chord is maintained as long as possible. The wing has a constant chord for 27 in. before tapering at each end. Aero Voyager’s wing has about 180 sq. in. (1.25 sq. ft.) of lifting area. At 16.5 oz. total weight, the Aero Voyager’s wing loading is near the very light end at 13.2 oz. per sq. ft. The result is slower flight speeds, better climb, longer flights and lower landing speeds. The wing is also not as sensitive to steep bank angles. Problem # 5 is reduced a lot.

Photo 3

Best of all, the Aero Voyager has full elevator control. Actually, it has elevons. These are twin tail surfaces that function as both a rudder for turns and an elevator for pitch control. Having pitch control moves the Aero Voyager into the realm of a true RC trainer. It also makes wind flying easier and more predictable. Problems 2 and 3 are minimized.

The Aero Voyager seems to be able to handle winds up to about 10-12 mph or so. Hobbico puts a 5 mph wind limit on the Aero Voyager. For a new pilot, this is an excellent guideline. In more experienced hands however, the airplane is better than this limit.

The sleek fuselage and available extra motor power makes reasonable wind penetration possible. The twin, inward-pointing motors stabilize the fuselage when fighting high winds. While no park flyer is truly a high-wind aircraft (20 mph or more) Aero Voyager pilots will be able to fly when other park flyer pilots are just “hangar flying” waiting for the wind to go away.

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Assembling the Airplane

Photo 4 Photo 5

The RTF Aero Voyager comes in one neat box containing everything needed to soar into the wild blue yonder except for the transmitter batteries. When you get the kit, remember to buy eight AA alkaline batteries so you can keep in contact with your airplane. As photo 5 shows, even a field charger for the flight batteries is included.

Photo 6 Photo 7

The assembly begins by putting the decals onto the airplane. There is something attractive about an airplane that requires decorating before assembling. This is the first clue that there really isn't much building to be done here. The decals are adhesive backed and easy to apply. They can be lifted safely away from the airplane if a problem develops. No special decaling skills are necessary.

One suggestion however, is shown in photo 7. Each of the fuselage sides have a decal applied over two servo mounting screws. Applying the decal over the screws gives poor results. Instead, carefully remove the two screws, one side only at a time, and apply the decal without moving the airplane from the workbench. Minimize fuselage movement to be sure the servo does not move. If it does, you can reposition it by removing the lower servo hatch shown in photo 7.

Once the decal is applied, use a pin to make a hole in the decal and re-install the two screws. Then do the same for the other side. Photo 7 shows the neat results. Our servos stayed firmly in place during the decal operation.

Photo 8

Photo 8 shows the three decals applied to the Aero Voyager's wing. Take your time and apply these larger decals slowly, starting at the wing tips. Make sure the decal smoothly adheres to the polyhedral part of the wing. Polyhedral wings have a straight center section (usually) while the outer wing areas point upwards. The stabilizing and rudder banking effects are the same as dihedral, while generating slightly more lift.

Photo 9

Once all the decorating is completed. It is time to assemble the airplane. Basically, this means bolting the tail onto the rear fuselage. Photo 9 shows everything needed to complete this assembly. The tools shown are provided in the kit, the thread locking compound came from my workshop.

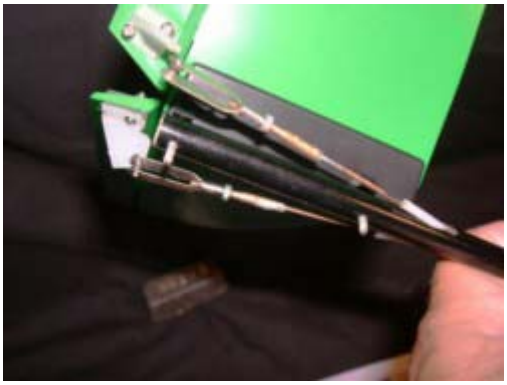

Photo 10 Photo 11

There are two threaded bolts that protrude from the underside of the V-tail's center section (photo 9). Position the V-tail over the two factory drilled holes in the rear of the fuselage and pass both all the way through (photo 10). Make sure the V-tail bottom rests firmly on the fuselage top. This sets the tail incidence and is important.

There is a plastic, bottom skid as shown in photo 9. Position this skid over the tail bolts as shown in photo 11. Make sure the "skid" part, the black half circle, is towards the rear. Apply the nuts and some thread locking compound and tighten both nuts securely.

Photo 12

There is a clevis on both sides of the fuselage. Connect each clevis to their respective control horns as shown in photo 12. Put the assembly aside for now to install the transmitter batteries.

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Photo 13 Photo 14

Unscrew the bottom battery compartment on the transmitter and remove the cover. There is a battery holder inside (photo 13) remove this holder and insert the eight AA batteries according to the directions. Make sure to get the polarity correct (photo 14).


Photo 15 Photo 16

Reinstall the battery holder into the transmitter. Make sure the two connectors are as shown in photo 15. Then replace the cover and screw in place. This battery installation is a little different from most other transmitters so it is detailed here.

Photo 17

This 3-channel transmitter has servo reversing and mix functions. The mix function combines elevator and rudder inputs into a V-tail control system. Therefore it should always be turned on for the Aero Voyager (photo 17). The servo reversing switches should be set as shown in photo 17. Channel One is set to normal while Channel Two is set to reverse.

Make sure the transmitter throttle lever on the top of the transmitter is set to the low, motor off, position. Center both trim tabs on the transmitter. Turn on the transmitter and put it in a safe area away from where you are working. Connect the on-board battery; the plug is under the canopy.

Turn on the airplane switch. Keep everything important like fingers, hands, tools and other things away from the propeller arcs. Remember that an electric motor is always “live” and can start at any time.

Photo 12

Check the tail control surfaces to make sure they are even. In photo 12, the elevon is slightly “down” Unhooking the clevis and turning it out one or two turns and reconnecting it brings the elevon level with the tail surface. Make sure to retighten the lock nut if any adjustments are made. Our Aero Voyager needed one turn outwards on each clevis. The photo directions clearly show how to accomplish this task.

If the control surfaces are not even, it may not be possible to control the airplane. It may also not be possible to trim the airplane for level flight. The trim tabs have only so much movement and poorly set control surfaces can be too far out of alignment to reset. So get this part right.

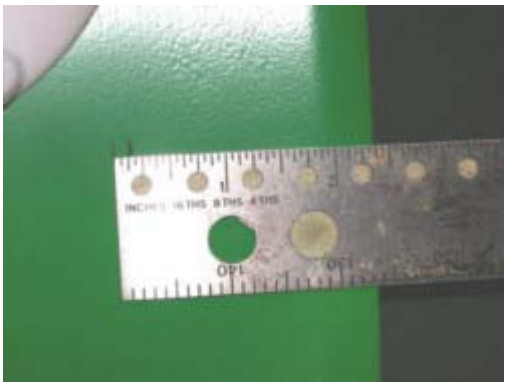

Photo 18 Photo 19

Checking the airplane’s Center of Gravity (CG) is another operation to get right the first time. Put two marks, one 2 ¼ in. and the other 2 3/8 in. in from the leading edge, on each side of the wing outside the fuselage area (photo 18). Place a finger between the two marks as shown in photo 19. Lift the airplane, with battery installed, as shown in photo 19. It should balance as pictured. Ours did, but if it does not, some stick-on weights should be purchased at the local hobby shop and installed in quarter-ounce increments until the airplane does balance. Actually, since everything is factory installed balance should not be a problem but check anyway to be sure. Checking the CG is part of every model aircraft assembly so now is a good time to start the habit.

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Out to the Field

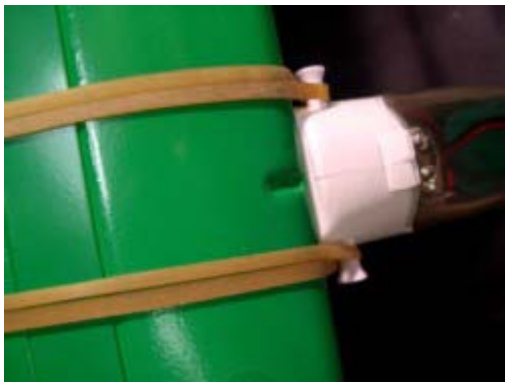

Photo 20 Photo 20A

Assembly, including decal application, takes about 15 minutes. It might take twenty minutes if you have the TV on while "building." Then it is time to go to the field. Once at the field, mount the wing using the supplied rubber bands. There are alignment marks at the leading and trailing edges. Make sure to position these marks at the centerline of the fuselage as shown in photo 20A.

The charger supplied with the Aero Voyager is based upon charging time. This means that overcharging the battery, thereby ruining it, can happen. It also means that you can't just load the Aero Voyager into the car and charge the battery on your way to the field.

Why not? Car batteries are 12-volts (most of them anyway). But the car's alternator puts out about 13.8 volts while the engine is running. The Aero Voyager's charger is calibrated to charge the completely depleted, 600 mAh, 7.2 volt Nickel Metal Hydride battery in 30 minutes when connected to a 12-volt source. If it is connected to a 13.8 volt source, like a car's electrical system when the engine is running, a 30-minute charge cycle puts too much current into the battery, eventually destroying it.

Time-based charging also means that the battery must be completely discharged before charging begins. The Aero Voyager has a motor shutoff circuit that cuts motor power when the battery loses almost all its charge. Some power remains to operate the on-board radio system so the pilot can safely land. After the flight, if the motors were still producing power, just hold the airplane safely with both propellers clear and run them until the shutoff occurs. Then charge the battery, after allowing some cool-down time, for 30 minutes. This operation is easier to do than to describe and is also a welcome relief when the temperature reaches the 95 Deg. F mark!

Photo 21 Photo 22

Unless you are flying from a runway covered in smooth, bare ice, flying the Aero Voyager means hand launching. There is a lot of power in this airplane so not much of a push is required. I just moved my arm forward and the airplane lifted itself skywards and never looked back (photo 21). It literally raced out of my hand. Getting up to about 200 ft. (photo 22) took about 15 seconds. The climb was so quick that I shut down the motors to glide as you see in the photo. Also, I didn't want to climb up into the way of something small that was moving *very fast* way up high (enlarge the photo to see it). Whatever it was crossed the sky in seconds and since the Concord is no longer flying, it was no airliner.

Photo 23 Photo 24

We made some low passes for the camera after trimming. Trim required three clicks of right rudder and two of up elevator while flying at about 2/3 throttle. Trim settings did not change with throttle settings. There was no climbing tendency when full throttle was applied. But the nose pointed skyward with a little up elevator and the airplane quickly climbed to altitude after each pass.

Shutting down the motors to glide did result in a slightly nose-down attitude. But the elevator was there to raise the nose back to glide attitude. Having an elevator for pitch control makes the Aero Voyager easy to fly for experienced RC pilots. Controlling attitude with throttle, like many RTF park flyers require, is a learning experience for old and new pilots. Experienced pilots will feel more comfortable with the Aero Voyager's more conventional attitude control system.

So, what can the airplane do? It can loop fairly well. Rolls however, are beyond its abilities even on a fresh charge. Inverted flight is also not what the Aero Voyager was designed for. It is not possible to keep the nose up flying inverted and altitude loss is rapid. It is nearly impossible to hold the airplane inverted anyway.

What the Aero Voyager does do is to fly like any quality 40-size RC trainer. There is a lot of wing lift and power so turns, even steeply banked ones, are easy. The airplane does not need much up elevator in a turn to maintain altitude. Altitude loss in banks over 70 degrees is rapid but the aircraft quickly recovers once the bank angle is reduced a little.

Upright trainer-style flying is a joy with the Aero Voyager. Control response is gentle enough to give the new pilot thinking time but positive enough that over controlling can be identified and avoided. Airspeeds are low unless full throttle is used. At full throttle, I would guess the airspeed could reach 35 mph. Climb is fantastic for this type airplane.

Our best flight time to date is about nine minutes. Longer flights are possible but it was hard to resist using full power for a few loops and high-speed passes. But nine minutes is enough time for a student to enjoy a meaningful flight lesson and that is all that is important at the start.

Photo 25

Landing speeds are in the 15 mph range (my guess). Pitch control is positive all the way down to the ground. Stalling is almost impossible and there is enough elevator authority for a good flare, raising the nose just before touchdown.

The Aero Voyager costs less than $100, completely ready to fly except for the transmitter batteries. The kit contains extra propellers, rubber bands and an excellent DVD about assembling and flying the Aero Voyager. The DVD also contains some good general tips and rules about RC flying.

Photo 26

Photo 26 says it all about my thoughts on the Aero Voyager after my first landing. This is one of the few low-cost, RTF electric park flyers that are a true RC trainer.

For more information about this aircraft, go to http://www2.towerhobbies.com/cgi-bin/wti0001p?&I=LXHLT9&P=GO