Model Aviation's Sport Aviator
The e-zine for the new model pilot
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Horizon Hobby Parkzone J-3 Cub

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All in-flight photos by Ray Juschkus

Horizon Hobby's ParkZone line of Ready-To-Fly (RTF), electric-powered RC models has a reputation for being quality built, excellent flying aircraft. Several reviews of ParkZone aircraft have already been published in Sport Aviator such as the Super Decathlon and the P-51 Mustang. But the subject of this particular article is the new ParkZone J-3 Cub BL (brushless) RTF. This J-3 features a brushless motor unlike so many RTF electric-powered Park Flyer aircraft.

Photo 1

The Horizon Hobby catalog number is PKZ4500 and the current (February, 2008) selling price is $160.00. That price gets you a ready built aircraft that includes a brushless electric motor and ESC (electronic speed controller) with a BEC (battery eliminator circuit); a Lithium-Polymer rechargeable battery pack with a companion charger and a ZX-10 complete RC system

(transmitter, receiver and two servos). Even a set of eight (8) “AA” size alkaline batteries is provided to power the RC transmitter.

Photo 2

FACTS ABOUT THE PARKZONE CUB

The ParkZone J-3 Cub has a wing span of 38 inches and a wing area of 200 square inches.

Photo 3

Stated target weight is 15 ounces complete with the 2-cell 800 mAh Li-Poly battery pack. The resulting wing loading is 10.9 oz/sq. ft. The motor is a 370-size brushless outrunner which is capable of running up to 10 amps motor current while using approx. 100 watts input power.

The ParkZone J-3 Cub meets all the aircraft requirements of the Academy of Model Aeronautics’ (AMA) Park Pilot Program. The aircraft weighs less than 2 pounds (the Program’s upper weight limit) and has a level top speed under 60 mph (the Program’s upper speed limit). For complete Park Pilot aircraft details, follow this link.

The AMA Park Pilot Program offers non-AMA members the opportunity to become AMA members at a much reduced cost. Park Pilot membership includes a great magazine “Park Pilot”, $500,000 personal liability insurance, $2.5 million liability insurance for the flying field owner (see insurance details) *and* membership in the world’s largest sport aviation association – the AMA. For complete information and details about Park Pilot membership, just click here.

WHAT COMES OUT OF THE BOX

Since this is an RTF model, essentially all of the work is already done for you.

Photo 4 Photo 5

The construction is both foam sheeting (wing, and tail assembly) and molded plastic for the fuselage and cowl. The brushless outrunner motor is factory installed with a spinner nut type propeller adapter and a plastic 8.25 X 5.5 in. pitch propeller.

Photo 6 Photo 7

An E-Flite, 10-amp rated ESC with BEC is also supplied and installed. The RC system is a ParkZone ZX-10 providing proportional control of three channels. The two servos (elevator and rudder control) are already installed as are the control rods, control horns and the surface hinges. A metal strap type landing gear is provided and includes already installed, 1 1/2-inch diameter soft rubber wheels.

The cowl is molded plastic that is partially held in place with a sticky backed tape along with some clear plastic tape. The factory installed engine cowling decals look so real they are almost 3-D.

WHAT STILL MUST BE DONE

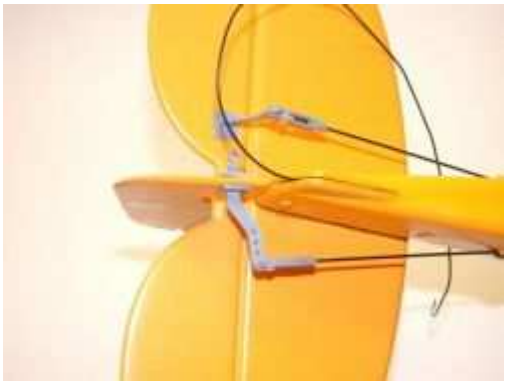

Photo 8 Photo 9

There isn't much to be done. The wing is already one piece with decals in place. The tail feathers are installed to the fuselage as are the control rods to the elevator and rudder.

Photo 10

Install the eight "AA" alkaline (alkaline only please) dry cells into the ZX 10 transmitter.

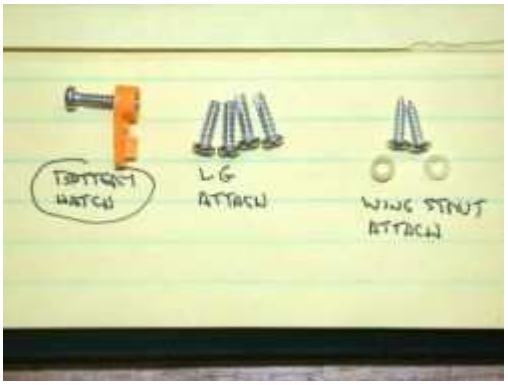

Photo 11 Photo 12

Install the four sheet metal screws that hold the landing gear in place on the fuselage.

Photo 13

A fifth screw (photo 13) anchors a plastic tab that holds the battery hatch cover in place.

Photo 14 Photo 15

You will have to “fish” the red “JST” connector that is exiting from the ESC out through the battery compartment opening where you can plug the battery pack into it.

Photo 15A

Inside the radio compartment with the wing removed. The rudder and elevator servos are at the left, with the receiver to the right. All components are factory installed and properly connected.

Photo 16

The last item is to attach the wing to the fuselage using the supplied yellow colored rubber bands. Then attach the lower ends of both wing struts to the bottom of the fuselage, using the remaining two supplied screws.

Make sure the wing is centered on the fuselage. Otherwise, one strut may tend to be loose while the other is too tight. That could result in the pulling up or down on one wing panel which can alter the dihedral angle.

ABOUT THE RC SYSTEM

Photo 17 Photo 18

The RC system includes the ZX-10 FM transmitter which operates on one of six 27 MHz frequencies. You get proportional control on all three channels, including throttle. The throttle control has a “bump” point slightly past half throttle that represents a good cruise power level for most of the battery’s charge cycle. Both elevator and rudder controls have proportional trim levers for both functions. The throttle does not have, nor does it need, a trim lever.

Photo 19

A switch at the top right side of the transmitter case provides dual rate control for both the rudder and elevator at the same time (in other words it is not selective). At high rate the rudder moves 3/8 inch either side of neutral while at low rate only 1/4 inch either side. On the elevator, high rate is 5/16 inch either side of neutral, while low rate is only 3/16 inch either side. These settings are not adjustable.

Photo 20

On the front panel, lower left are two servo reversing switches. They are already set properly for this J-3 Cub. Do not readjust them. Next to those two switches is a switch marked “TV”. That may be for activating “ruddervators” on a “V-Tail” aircraft such as are used on many HobbyZone aircraft like the Firebird Commander. But as the instructions do not mention this control, this is only an informed guess.

Photo 21 Photo 21A

The push button on the top left of the ZX-10 transmitter is used to activate the X-Port accessories found on several more advanced HobbyZone aircraft such as the HobbyZone Aerobird Swift (advanced HobbyZone and most ParkZone aircraft share the ZX-10 transmitter). When you turn the Transmitter power on, a red LED glows steadily and a single beep is heard. If the red LED blinks, replace the batteries.

The throttle control stick is located at a 45 degree angle on the left side of the transmitter case. You operate this lever with the fingers on your left hand.

ABOUT THE POWER SYSTEM

Photo 22 Photo 23

The brushless outrunner motor that comes already installed in this J-3 Cub is stated as a “370” type. I didn’t note any parameters for this motor. If you take it as being comparable to the E-Flite 370, then it should be capable of up to 10 amps motor current and approx. 100 watts input power. Running on the supplied 8.25 X 5.5 propeller and the 2-cell ParkZone 800 mAh, 10C (1.5 ounce) Li-Poly battery pack produced the following operational data: 7.18 amps, 6.88 volts, 49 watts and 6200 rpm.

Photo 24

The Cub’s final flying weight ended up at exactly 15.2 ounces. So, at 49 watts input power that works out to 3.2 watts/oz. or 52 watts/lbs. This is a perfect power loading for a RC sport flyer. At 7.18 amps motor current the battery load is 9C, which is close to the upper limit of the supplied pack. But the pack dimensions allow it to fit perfectly in this Cub so I wouldn’t consider an alternative pack.

The calculated motor run time at full throttle is only around 7 minutes. Since this pack is selling for just $23.39, you might consider purchasing several packs to have on hand so you can obtain more flight time.

Photo 25 Photo 26

A balanced type Li-Poly battery charger is supplied (photo 26). The ParkZone battery pack has a node connector that plugs directly into this charger.

While charging, the RED LED flashes. On reaching full charge the LED glows steadily. The one thing that bothered me is that this charger is intended to be plugged into the accessory socket inside your car. That means the battery and charger must remain inside the passenger compartment of the car while it is charging. I prefer that the charging take place outside the car. Fortunately the folks at Horizon Hobby must have felt the same way because they now offer an adapter cable (P/N HBZ6513) that accepts the lighter plug on one end and has alligator clips on the other.

Photo 27

I clip this cable to the terminals of my car battery and then place both the charger and battery on a small table right next to the front fender of my car. It's a simple suggestion and to me adds to the overall safety of the charging process. (*Ed. Note: Li-Poly batteries are safe to use if used* ONLY *as directed. They offer the best performance of all battery types but must be treated with care.* ALWAYS *charge a Li-Poly battery with a charger designed for this type battery.* NEVER *use another type charger such as one designed for Nickel Cadmium or Nickel Metal Hydride batteries. NEVER charge a Li-Poly battery while it is inside the airplane.* ALWAYS *charge Li-Poly batteries only on a non-flammable surface. If misused, Li-Poly batteries can catch fire and they burn at around 2000 deg. F. Anything flammable near them goes up as well. They are a great system but follow the rules.)*

By the way, this charger operates at about 800 mA current. So, a fully depleted 800 mAh Li-Poly battery will take roughly one hour to reach full charge. Again, buying an extra battery pack will increase your flying time. You can fly on one, while the other is on the charger.

The battery and ESC cable use mating halves of the red plastic JST type connectors. I generally use this type plug up to about 5 amps motor current. Using at 7 amps, as is the case here, is kind of "pushing" the capacity of this connector. However, I didn't find my connectors hot after any flight, so I'd have to say it is OK.

SOME COMMENTS ON THE ESC

The one thing that might appear somewhat complicated for the beginner is the programming options for the ESC (electric motor controller). I think it safe to say that, as received, this ESC has been programmed for use with this J3-Cub and a two cell Li-Poly battery pack. The factory default settings will permit you to fly the J3 Cub literally right out of the box. But if you intend to use this ESC for *other* aircraft applications later on, you will want to make sure you save the instructions.

As received, this ESC will prevent accidental motor start up if the Transmitter throttle control slider is at any position other than idle. Knowing this, it would be impossible for an accidental motor start up. When you first turn on the Transmitter and then power up the aircraft, you will hear one long beep followed by two or three beeps.

The two beeps mean that the low voltage cut-off has been set to approx. 6 volts for use with the supplied two cell Li-Poly battery pack. This is done to protect the batteries which should never be allowed to discharge below 3 volts per cell. In the air, when that low voltage point is reached the motor will pulse (on and off) repeatedly. The radio system will continue to operate.

When this happens you must land your airplane immediately and recharge the battery. The factory default setting for this ESC also has selected for you the proper "timing" for an outrunner motor and the brake is in the off position. Should you receive any form of radio interference or exceed the normal radio range, the ESC will shut down your motor (turn it off in flight).

BALANCE POINT (CG)

I couldn't find any reference to a center of gravity or balance point in the instructions. As it turned out, the J-3 Cub seemed to balance just about perfectly based on my experience with similar aircraft. The exact balance point I obtained, with the 1.5 ounce Li-Poly battery pack, is 1.5 inches (27%) back from the wing's leading edge.

FLYING

Photo 28 Photo 29

Flying the ParkZone J-3 Cub was a total pleasure. There is more than enough power available. That being the case, make sure you throttle back a lot during each flight, rather than always flying at full throttle. By throttling back, you will greatly extend your time in the air. As pointed out the motor will run only 7 minutes if flown all at full power. But with a lot of throttling I have been able to obtain 12-13 minute flights.

Check that both flying control surfaces are connected and move in the proper directions. Make sure the wing is centered, both struts are connected and have equal pressure on the wing and that the battery door is locked in place. The first flight is not the time for the battery to drop out during the hand launch. Thinking about it now, since this is a BEC airplane and the radio stops working once the motor battery disconnects, there is *no* good time for the battery to fall out during flight. Keep the battery door locked.

Photo 30 Photo 31

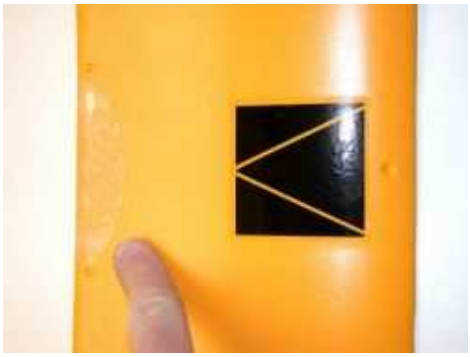

Photo 32 Photo 33

The ParkZone J-3 Cub has a lot of detail for this size airplane. It looks very good at the field.

A clear plastic tape is placed by the trailing edge of the wing to prevent the hold-down rubber bands from penetrating into the wing structure (photo 33). There was no such tape at the leading edge, but no problem was noted.

Photo 34

My flying field is mostly rough grass so I resort to hand launching my smaller models. For the very first flight, always have a helper do the hand launching so that both hands are on the transmitter's controls should a quick correction be required. After that first trim flight you should have no trouble hand launching the Cub yourself.

Taking off the ground is also a possibility if you have a smooth or paved surface. Since there is no steerable tail wheel you will find the Cub can easily ground loop (spin around in tight circles). You will have to adjust your take-off speed to make sure you obtain a straight run. At full power the Cub gets off the ground quickly, so take-offs should not be a problem. By the way, even though dual rate control is available, I found the high rate to suit me all the time.

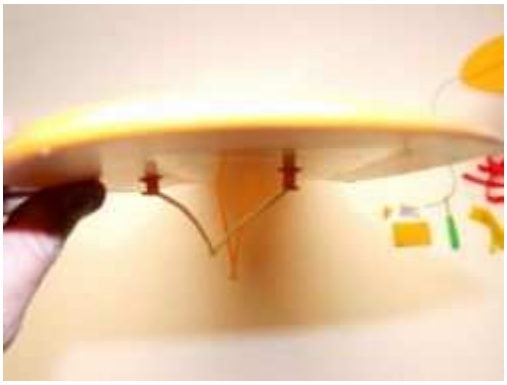

Photo 35

I was surprised at first to note that the Cub had very little dihedral in the wing (the “V” angle of the wing). But cleverly the ParkZone engineers placed some washout at each wing tip (tips raised slightly at the trailing edge; (photo 35). Although hard to even see, this washout apparently does work, because turning maneuvers posed no problems at all.

Photo 36

You can do a few basic maneuvers, like loops, even from level flight when at full power. Horizontal Figure Eights are fun. This is a good training aircraft.


Photo 37 Photo 38

Landings are easy and there appears to be no tendency to tip stall when slowing down the air plane. The airplane remains on line and the landing approach is easy to manage. The approach is flown slowly as is common for this class of Park Flyers. It might even be possible to land the Cub on something as small as a large picnic table. Cub Carrier events anyone?

SUMMARY

Considering that no real work is involved you can be out to the flying field in an hour or less. Flying the Cub is a pleasure and the scale appearance only adds to the overall fun. The price is right considering that everything you need for flying is included. I might add that the power system and radio system are of excellent quality and when you are finished with the J-3 Cub these systems can easily be transferred over to other aircraft. It is like a permanent investment! Also be advised that on the Horizon Hobby website, under this J-3 Cub, is a list of all the spare parts that can be purchased separately should you ever break anything.

For more information on this Park Flyer scale trainer, go to:
http://www.masportaviator.com/activedit/../redirect.asp?website=ArticleLink_HorizonHobby_ParkZoneJ3

There is also a Plug N' Play (PNP) version of this airplane. The PNP version is the exact RTF airframe finished to the same level as is the RTF version tested. It includes factory installed servos. However, its $96 price does not include the transmitter, receiver, Li-Poly battery pack or the battery charger. If you already have these items, the PNP version may be for you. If not, the extra $70 for the radio system, battery and charger is, quite frankly, a steal. There is no possibility to duplicate this equipment for only $70. The PNP version can be found at:
http://www.masportaviator.com/activedit/../redirect.asp?website=ArticleLink_HorizonHobby_ParkZoneJ3_PNP

A YOUNG MAN'S THOUGHTS TURN TO SPRING?

Why not consider, next summer, adding a set of twin floats to your J-3 Cub. The extra weight of several ounces shouldn't hurt the flying characteristics. I found a 19 inch length set of pink foam twin floats that would look great on this Cub. They can easily be spray painted yellow to match the aircraft. One source of supply for these floats is Dan Schwartz at http://www.foamfly.com/.

Specifications

Manufacturer: ParkZone
Radio: ParkZone ZX-10
Servos: 2 x sub-micro
Engine: 370 outrunner

Length: 26.75 in.Bottom w. washout
Wing Area: 200 sq. in.
Wing Loading: 10.9 oz./sq. ft.
Wingspan: 37.25 in.
Weight: 15.2 oz.Airfoil: Flat

Cost: $160.00

Special Airframe Features: Completely built, Ready to fly. Greta Park Flyer.

Electric Power Specifications

Prop: 8.25 x 5.5 in.
Max Watts: 49 W
Max Voltage: 6.88 V
Motor Run Time: 7-12 minutes
Max RPM
Power Loading: 52 W/Lb.
Motor Current: 7.18 A