BY JERRY SMITH ■ PHOTOS BY JERRY SMITH

Precision Aerobatics EXTRA MX

A fully 3D capable ARF with amazing performance and unique construction features

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THE NEW HIGH-PERFORMANCE Extra MX from Precision Aerobatics (PA) is aimed at skilled 3D pilots, as well as the sport pilot who aspires to be one. Its lightweight airframe is powered by a PA Thrust 50 brushless motor and gives the Extra MX a very high power-to-weight ratio—a desirable feature for 3D performance. As I unpacked my test model, I noted its wing construction can be seen through the translucent covering on the bottom of the wing and its special, pre-hinged aileron installations. The hinge line on the aileron is set back from a rounded leading edge which mates with a u-section on the wing trailing edge and eliminates the hinge gap. Removing the canopy illuminates the fuselage interior where much carbon fiber (CF) strengthening the balsa and ply high-stress points can be seen. PA calls this FiberFusion and it produces a lighter, stronger airframe that enables unique production techniques. This weight-reducing concept lowers wing loading for amazing flying characteristics.

Besides the major airframe components you can expect to find: painted fiberglass engine cowl and wheelpants, CF landing gear, wheels, tailwheel, a reinforced motor box with extra CF bracing, a comprehensive hardware pack, removable canopy and even some extra covering material to seal the tail control surface hinge gaps. The well-written assembly manual has good clear pictures and there's a DVD presentation on some of their other products.

To eliminate hinge gap, the aileron hinge line is set back with a rounded leading edge that mates with a u-section on the wing's trailing edge. Note the Optional CF "Vortex Generators" added for increased performance.

The Thrust 50 motor slides in place from the bottom. Note the CF reinforcement added to the sides of the motor box for additional strength.

UNIQUE FEATURES

I began the build by installing the long, 3D flying, carbon-fiber servo arms (optional) for the correct servo linkage geometry and attached the supplied ball links on the servo arms. I also used the optional lightweight PA extension lead wire to ready each servo for installation. I then cut away all the covering for the servo openings with a micro tip soldering iron. After installing the aileron servos and linkage, I taped the aileron in the neutral position, installed the CF control horns with the metal clevis attached to them and centered the servos with the transmitter. I cut the CF control rods to

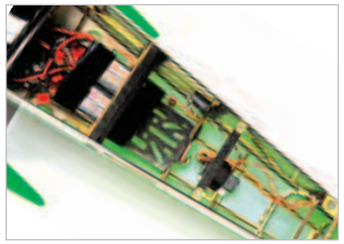
SPECIFICATIONS

MODEL: Extra MX
MANUFACTURER: Precision Aerobatics (precisionaerobatics.com)
TYPE: 3D aerobatic ARF
WINGSPAN: 58 in.
WING AREA: 721 sq. in.
LENGTH: 51.83 in.
WEIGHT: 61.7 oz. ready to fly
WING LOADING: 12 oz./sq. ft.
RADIO REQ'D: 4-channels (rudder, throttle, ailerons, elevator)
POWER REQ'D: Thrust 50 brushless motor

HIGHLIGHTS

- Awesome aerobatic performance
- Excellent power-to-weight ratio
- Unique carbon-fiber reinforced airframe
- Two-piece wing

BECAUSE OF ITS LOW-WING LOADING AND GREAT POWER-TO-WEIGHT RATIO, THE MODEL EXCELS IN VERTICAL PERFORMANCE



Plenty of room in the radio compartment. Two 3-cell 2,200mAh LiPos are required for best performance.

length and then glued the clevises in place with 30-minute epoxy. Typically, all the other control surfaces were hooked up in this same manner. If needed, slight adjustments can be made before the epoxy cures.

I installed the airfoil-shaped tail surfaces next. The horizontal stabilizer slides easily into the fuselage slot, but not before I removed a piece of the fuselage with a razor saw. The center section of the stab is flat with a tapered rib on either side that fits flush against the fuselage sides. The elevator and rudder come hinged with the CA hinges already glued in place in one side of the control surfaces. Once glued in place with the linkage hooked up, the tail assembly is almost done. The tailwheel assembly fits into a slot formed in the bottom of the rudder to accommodate it.

CONTROL THROWS

AILERON: ± 7/8 in., 30% expo (low); ± 3 in., 70% expo (high)

ELEVATOR: ± 7/8 in., 30% expo (low); ± 3 in., 70% expo (high)

RUDDER: ± 2 3/4 in., 35% expo (low); ± 3 in., 70% expo (high)

GEAR USED

RADIO SYSTEM: Spektrum DX7 transmitter, Spektrum AR7000 receiver (spektrumrc.com); four 5085MG digital servos (hitecrc.com)

POWER SYSTEM: Thrust 50 brushless motor and Quantum 65A ESC (precisionaerobatics.com)

BATTERY: two 11.1V, 2200mAh, 3-cell LiPo (precision aerobatics.com)

PROP: Vox 15x7 (precisionaerobatics.com)

In the Air

Before heading for the field I made a complete preflight check. After a range check, I placed the Extra on the runway and advanced the throttle slowly. When gaining altitude, I could see that my setup was slightly tail heavy so I brought it back in. I shifted the battery packs forward a little and tried again. This was a good move because I found the Extra MX to be a rock-solid performer

GENERAL FLIGHT PERFORMANCE

Stability: The Extra is very predictable and neutrally stable with no bad habits. This is one great feature of this airplane that you'll like.

Tracking: It goes exactly where you point it. The Extra is very responsive and tracks true through all of the maneuvers at all airspeeds.

Aerobatics: Because of its low-wing loading and great power-to-weight ratio, the model excels in vertical performance. It's right at home during precision maneuvers such as loops, rolls, spins and knife-edge flight. With the CG properly located as specified, you'll find the model is very close to optimal for any type of flying style. It's stable in hover and can go vertical with ease.

Glide and stall performance: The glide performance is excellent and it floats nicely when slowed up. Stalls are a bit mushy with no wing fall off. Recovery is easy with a small amount of power required.

PILOT DEBRIEFING

After flying the Extra MX for a considerable amount of time I found it extremely easy and fun to fly. It is an excellent machine for practicing 3D and precision aerobatic maneuvers. I highly recommend the PA Thrust 50 motor system because its part of the iPAs performance package that has been thoroughly tested with the Extra MX airframe.

The motor box keys into the fuselage with tabs and is pinned in place with a CF rod. Because of the extra power of the Thrust 50 motor, you should re-glue all the joints with epoxy after installation then add the included braces to each side. The instructions have you epoxy a small piece glass cloth to the bottom edge of the firewall. For added support, a long piece of CF rod is pinned through the front side and epoxied in place. Do not over tighten the motor attachment bolts and crush the wood. This could weaken the mounting and cause the motor to come loose. Snug the bolts up tight, then add a quarter turn. Don't forget to use thread-locking compound.

Thrust 50 Brushless Motor

The Precision Aerobatics Thrust 50 (487kV) is the largest and newest in the PA series of brushless outrunner motors. As with all PA Thrust motors, the 50 incorporates RotoKool technology that brings airflow through the motor to cool its internal components and keep them at optimum operating temperatures. PA calls it "High Velocity Force Cool Ventilation" (HVFVC) and it is achieved with a set of CNC-machined impeller blades that are a part of the rotor end bell assembly. The motor also has a two-year warranty (thrustmotors.com).

I bolted on the landing gear and installed the engine cowl with four screws making sure of alignment. I installed a wooden Vox 15x7 prop along with a CF 1.8-inch Ultimate-style spinner. The Extra MX is a fast build indeed, but do take your time and get it right for trouble-free flying.

CONCLUSION

There is no doubt that the Extra MX from Precision Aerobatics is a quality product. The company has gone to great lengths to design and develop a serious aerobatic plane that has amazing flying characteristics. I experienced no assembly problems and found it an enjoyable building experience.

HANGING A HOVER

One of the first 3D moves most pilots attempt is the vertical hover. This move is fairly easy and it the first step to performing the even more impressive torque rolls. To set up your model for a hover, set your control throws to maximum. You'll need about 35 degrees of travel on both sides of the elevator and rudder and about 25 degrees for each direction for the ailerons. Use about 40% expo to soften the response near neutral. Also set your balance point to the absolute aft position of the CG range.

- **Start at a safe altitude,** but as close in as possible to yourself so you can pick up on needed corrections more quickly. Also be aware of the wind direction. Set up your attempts so the plane drifts away from you. It's easier and safer this way.
- **Perform a fairly low, downwind pass,** then just before the model passes you, reduce power by about a third and pull up into a quarter loop. The plane's vertical speed will diminish rapidly because of the throttle setting.
- **When the aircraft stops climbing,** try to maintain an absolutely vertical attitude. Rudder inputs are most critical here to keep the wings level.
- **Just before the model stops climbing,** add power to prevent the model from sliding backward. It should take about 60 to 70 percent power to maintain altitude.
- **Motor torque will tend to make the model roll to the left,** so use this to get the plane's canopy facing you. Then use slight right aileron input to stop the torque-induced roll.
- **Use elevator to keep the nose from falling away or toward you** and use throttle to maintain altitude.

TIP: With your model's canopy facing you, move the rudder stick to the high wingtip to level the wings. With the landing gear facing, move the stick to the low wingtip to return to wings level.