

by Jonathan Pope

Mastering both
aerobatic and 3D
notebooks alike



MULTIPLEX

AcroMaster

PHOTOS BY WALTER SIDAS



SPECS

PLANE: AcroMaster

MANUFACTURER: Multiplex

DISTRIBUTOR: Multiplex USA

TYPE: 3D Elapor foam aerobat

FOR: Intermediate to advanced fliers

WINGSPAN: 43 in.

FLYING WEIGHT: 37.4 oz.

WING AREA: 567 sq. in.

WING LOADING: 9.5 oz./sq. ft.

LENGTH: 45 in.

RADIO: 4 channels required; flown with Hitec Eclipse 7 transmitter, Hitec Mini 6S receiver, (2) Hitec HS-85BB micro servos (elevator and rudder), (2) Hitec HS-65HB micro servos (ailerons)

POWER SYSTEM: Himax HC 3516-1130 brushless outrunner motor, APC 11x5.5 E prop, Castle Creations Phoenix 45 brushless speed control, Venom 3S 2200mAh 15C Li-Poly battery

FULL THROTTLE POWER: 36.8 amps, 386.4 watts, 10.33 W/oz., 165.3 W/lb.

TOP RPM: 9,250

DURATION: 10 minutes of mixed pattern and 3D flying

MINIMAL FLYING AREA: Ball field



STREET PRICE: \$125

COMPONENTS NEEDED TO COMPLETE: Radio and motor system, propeller, 2 servo extensions

SUMMARY

The Multiplex AcroMaster is an Elapor foam sport/3D airplane designed by aerobatic champion Martin Muller. Together with the optional power kit and flight pack, this model is a top-rated performer. The AcroMaster can fly clean and true aerobatic sport patterns while also being able to boast full 3D capabilities for even the most aggressive freestyle pilot around. This ship will become a favorite for anyone who has the chance to fly it.

Multiplex has established their reputation for well-designed, highly durable foam airplanes that fly great. Their success has everything to do with talented designers who create fun airplanes and develop each into fully capable ships. The secret is a lightweight and strong, highly durable (and easily fixable) molded foam called Elapor. Elapor requires no special techniques when building, flies light and strong, is amazingly resilient to dents and dings, and will stand up well to most mishaps that would send a balsa bird back to the workbench.

When I was first learning how to fly, I flew Multiplex's Twin Star as an aileron trainer. I practiced a new idea called coordinating turns and went a bit overboard programming mixes with my first computerized radio, the Hitec Eclipse 7. The Twin Star inspired great confidence and was surprisingly easy to fix when I got too far ahead of myself and the learning curve won another round. The Elapor foam glues back together without even a trace of an incident. A hundred flights later, the Twin Star didn't reveal the countless crashes it endured and was still as airworthy as for its maiden flight.

Just about a year ago, Multiplex released the 43-inch AcroMaster at the Nurnberg Toy Fair in Germany. This sport/3D flyer was designed by aerobatic champion Martin Muller. The AcroMaster boasts four-channel control with a fully symmetrical wing and double beveled large control surfaces for excellent 3D capabilities. Coupled with those features, a tall fuselage and long tail moment promise great precision sport pat-

tern flying. The canopy, spinner, wheels and wheel pants all utilize Elapor foam construction to keep the overall weight down and the durability high. All necessary hardware is included in the kit, including pre-bent landing gear, fiberglass wing tubes and an ingenious motor mount with thrust adjustment screws. Decals and five pages of detailed written instructions and clear diagrams round out the very complete package.

TIPS FOR SUCCESS

From box to flying field, the time and effort needed to have the AcroMaster ready is very low. Multiplex's Elapor molding process is very accurate, and as a result, all parts join together for a true fit. This makes each step a pleasure, because it all seems to simply fall

together. It is necessary to sand the leading edge of the wings and stabilizers slightly to keep the air flow smooth when at high angles of attack. Gentle pressure and just a few passes is all that it takes.

Elapor foam is very easy to work with, as regular CA and kicker do not eat the foam. The instructions talk about using medium CA on one surface and kicker on the other. I don't like the finality of the initial moment the two surfaces match up. Instead, I used polyurethane Sumo glue. Since polyurethane glues do expand and foam, I had to be careful that the parts did not get pushed out of alignment as the glue cured. Note that Multiplex specifically recommends using CA, and that kicker is not required if you want a bit more working time.

AIRBORNE

The final weigh-in showed the ample 567 square inches of wing area would only be carrying 9.5 ounces per square foot. This is on the light side for an outdoor flyer, so my excitement for the maiden flight was palpable. The Himax brushless motor that is a part of the recommended power kit package is rated at 350 watts. At just over two pounds on the bench, I knew the AcroMaster was set up and ready for unlimited 3D flight.

Once on the flight line, I was glad the AcroMaster had the looks of a .30-size 3D balsa plane and would be able to handle a bit of a breeze. Slowly advancing the throttle, the ground handling was excellent with the steerable tail wheel. The two-inch foam wheels and springy undercarriage worked well on the freshly mowed grass, but I think taller grass would grab the wheel pants. There was little need for any rudder correction and the plane lifted off the ground in four to five plane lengths. Even on this initial ascent into the pattern I noticed the plane was tracking very straight lines on its own. Staying on low rates for the moment, I checked out the trim, CG and thrust angle and was pleased to see it was all closely dialed-in from the start. With the CG set up five inches behind the leading edge of the wing, inverted flight was close to being neutral. Bringing the throttle down low to check out what the stall was going to look like, I first had to wait through a very good glide and had low speed control authority on all surfaces. When the stall did finally come, it was gentle and polite, and just a hint of throttle got the AcroMaster flying again with very little altitude lost.

Knowing that there are no bad tricks up this plane's sleeve, I flipped over to high rates with every surface at full deflection. First I leaned the ailerons all the way over and the rolls were perfectly axial in both directions with no need to program in differential. The roll rate was terrifically fast at about three rounds a second. The rudder can lift



the nose of this plane in knife-edge just below half throttle and hold it there with the help of generous fuselage side area. There is a gentle pitch coupling to the gear when flying from right to left that I won't bother to mix out. The counter-balanced elevator can transition the AcroMaster into high angles of attack smoothly with no gain in altitude for harriers and hovers. I found inverted harriers were effortless and upright had little wing rocking. Hovering this bird is easy with its size and large control surfaces and more than enough power to pull vertical when the easy turns difficult. I wanted more precision around stick center, so I ended up adding more exponential all around on high rates

because the throw was so fantastic.

All pattern-style aerobatics can be easily flown with precision, as the AcroMaster tracks through loops and holds lines cleanly. Post-stall maneuvers are where I think this plane finds its pedigree. Rolling harriers with the ailerons on low and the tail on high rates can keep a consistently high attitude with little effort. Accelerating into an aggressive wall, the AcroMaster stops in its tracks and simply stays put. There is no snap off to one side at all. Both upright and inverted spins flatten out beautifully, and recover quickly after neutralizing the controls! Full-on blenders are a pure rush of adrenaline. When it is time to land to swap out for a fresh pack, shoot for a smooth approach and final flare. The springy landing gear will absorb less graceful flops, but you may need to bend it back into shape.

In later flights, I began to hear vibrations that weren't previously present. I throttled back as soon as I heard the unusual harmonics and landed. After many aggressive gyrations, the motor mounting screws needed to be tightened up. By balancing the prop and checking the screws from time to time, any problems with these destructive vibrations will be easily avoided.

Just before applying the glue, make sure to roughen up all plastic parts and give a light sanding to the Elapor joining surfaces. I also wipe the surfaces with a damp cloth to help activate the polyurethane glue.

On the "Nice Features" list, I found a set of 3D servo arms included with the kit that provide perfect geometry with the control horn and full deflection for all surfaces. Also the canopy hatch clips have worked very well, holding securely in flight, but very easy to remove when changing packs between flights. Having a plastic elevator joiner and landing gear

mount is a strong and lightweight hard point for attachment. The included stickers are lightweight and with the tips included in the instructions for putting them on, the entire process was enjoyable. I used Tamiya spray

paint for plastics on the canopy and spinner. The spinner is Elapor foam and is friction fit, and though I doubted its ability to work, it has done its job perfectly. I did, however, have problems with the included collet. With high gyroscopic loads it would slip and produce an audible noise and loss of power. I replaced it with a Maxx Products 5mm prop adapter and everything works well.



Installing the Hitec receiver only took a few seconds to peel and stick the velcro squares.



The Venom 3S 2200mAh pack nestles neatly into the fuselage and provides plenty of power for the AcroMaster.



The fuselage servo pockets are perfectly sized for the Hitec HS-85s. A dab of glue will hold the servos securely in place. The extended 3D servo arm uses the center screw and a second to secure it to a standard output arm.

CONCLUSION

Multiplex USA has another fantastic product in the AcroMaster. It is easy to assemble, flies with great control and authority, and is just a lot of fun. The

pure aerobatic and all-out 3D capabilities of this ship make it a real winner that will inspire great confidence. The Elapor foam construction will stand up to its share of abuse well and, when needed, can be repaired with integrity. The optional power kit that includes a Himax brushless outrunner motor paired with a Castle Creations Phoenix 45 ESC and APC 11x5.5 prop is perfect for this airframe. Consider also the optional Hitec radio flight pack. Together, this unbeatable package delivers exceptional performance. ☼

Links

APC Propellers, distributed by Landing Products, www.apcprop.com, (530) 661-0399

Himax Motors, distributed by Maxx Products International, Inc., www.maxxprod.com, (847) 438-2233

Hitec RCD USA, Inc., www.hitecrd.com, (858) 748-6948

Multiplex, www.multiplexusa.com, (858) 748-6948

Venom Air Corps., www.venom-aircorps.com, (800) 705-0260

For more information, please see our source guide on pg. 185.