

HOBBY LOBBY

Executive Jet

When I was accepted to attend Embry-Riddle Aeronautical University in 1992, I had to make a choice up front: learn to be a pilot, or learn to be an engineer. I'm still not sure which cosmic force drove me to the latter, but whatever it was, it eluded many of my friends. I moved on to a career in the space program; they moved on to Learjets, Gulfstreams and Citations.

As I'm a homebody, I guess it's a good thing that I didn't follow the same path as my globe-trotting vagabond pals. Though I rarely regret my decision, I do sometimes wonder what it feels like to drive a nimble limousine through the sky. With Hobby Lobby's Executive Jet, I can evoke that feeling without needing years of expensive training or even a captain's hat.

The midsize electric ducted-fan (EDF) Executive Jet is made of molded styrofoam with strategically placed balsa and light-ply; the decals are applied. Obviously inspired by the Learjet 45, it certainly captures the look and feel of a corporate jet. Much of the assembly and finishing work are completed at the factory. All of the control surfaces, including the film-covered balsa ailerons, arrive hinged. The hinges are "secured" with a small self-tapping screw. I doubt that the screws are adding anything to the joint, since they contact only the plastic hinge and the surrounding foam, but I left them alone.

The foam parts are nicely molded and have a smooth surface finish on most of the visible areas. A large access hatch over the battery compartment features a spring-loaded latch and sizable cooling-air inlets. The kit also includes good-quality hardware, fixed landing gear and two ducted-fan units. Assembly is guided by a 15-page manual containing a lot of black-and-white photographs. It's good, but there are a few gaps; nevertheless, anyone with intermediate or better skills won't have any problems overcoming those minor obstacles.

ASSEMBLY

I followed the assembly steps slightly out of sequence. Figuring that I'd have to do a lot of tweaking to get the optional retractable landing gear to work properly, I installed them first. It turned out that the retracts were unexpectedly easy to install. The nose gear fit and worked perfectly from the start. The main gear in the wings was only slightly harder to install. The wheel wells are already cut out of the foam. I merely had to provide a path for the actuating



The Executive Jet has a good speed range and easy handling. Anyone with aileron experience should be able to pilot this sleek but stable airplane.

PHOTOS BY JAMES LEMON



AIRBORNE

The jet's steerable nosewheel makes it nimble on the ground; in fact, my first two takeoff attempts had it weaving down the runway as if it was on a slalom course. The recommended rudder/steering throws are great for flying and taxiing, but I set the low-rate throws at 25% so that I can easily keep the plane on the runway during takeoff and landing.

Under full power, the Executive Jet gets to flying speed quickly, but it won't rise without elevator input. I keep accelerating on the ground and then gradually pull the nose up into a shallow departure angle and retract the gear. Cleaned up, it casts an impressive profile as it heads skyward.

The recommended throws and balance point result in an airplane that is very comfortable to fly. It feels like many aileron trainers that I've flown. Rolls are smooth and just fast enough not to require elevator correction to maintain altitude. The elevator has plenty of authority for loops and inverted flight but not enough for snap maneuvers (whether intended or not). The rudder can't provide knife-edge flight, but it works great to extend those high-banked photo passes, and it will coax the plane into a loose spin. A little coordinated rudder input will also make your turns look much nicer.

The Executive Jet is not very fast, yet it does have a good speed range. Landings are slow and easy, and the top end probably won't stretch your comfort zone too much. Don't get me wrong. This bird has no trouble getting around; it just isn't a screamer. I think its speed range complements its maneuverability and makes it well suited to pilots with some aileron experience. More advanced pilots will also appreciate its laid-back aerobatics and easy handling, which are rare in an EDF that attracts so much attention.



SPECS

PLANE: Executive Jet

MANUFACTURER: Super Flying Model

TYPE: Electric ducted-fan ARF

WINGSPAN: 50 in.

WING AREA: 370 sq. in.

LENGTH: 50.7 in.

FLYING WEIGHT: 42.9 oz.

WING LOADING: 16.5 oz./sq. ft.

RADIO: Hitec Eclipse 7 transmitter, FMA Fortress receiver, 2 Hitec HS-55 servos, 4 Scanner RC SR9320MG servos, Dimension Engineering ParkBEC.

MINIMUM FLYING AREA: Club field

PRICE: \$168

POWER SYSTEM: 2 Super Flying Model MT2235 brushless outrunner motors, 2 Super Flying Model SFM2421 30A ESCs, 2 PolyQuest 3S 1800mAh 20C LiPo batteries (parallel)

FULL-THROTTLE POWER: 28.9 amps, 313 watts, 7.3 W/oz., 116.7 W/lb.

DURATION: 8+ min.

COMPONENTS NEEDED TO COMPLETE: Motors for included ducted fans, 2 3S 1800mAh LiPo batteries, 4- to 5-channel radio with 2 micros servos and 2 miniservos (and 2 miniservos for optional retracts)

SUMMARY

The Hobby Lobby Executive Jet is a foamie EDF that makes it easy to join the jet set. A few hours of assembly produce a stylish, spotlight-stealing airplane with refined flight performance that attracts a broad spread of sport pilots.

HOBBY LOBBY EXECUTIVE JET

pushrods to reach the servo on the top side of the wing. I used a low-power soldering iron with an old tip to make a nice clean hole through the foam. This technique requires a steady hand and a well-ventilated room. Slight creative bending was required to allow the pushrods to travel through their full range of motion without binding.

Hobby Lobby recommends two Scanner RC SR9320MG servos for the retracts. These metal-gear servos are slightly bigger and heavier than average micros servos, but they have considerably more torque, too. I used the outer hole of the included 8-point servo arms for all the retract pushrods. With this setup, all three axles lock up and down without buzzing and without my having to alter the servo endpoints. There was some binding: the main gear axles contacted the pushrods when retracted. I shortened the axle, and this problem went away.

I used Velcro to install the receiver and ESCs above the center of the wing cutout on a homemade foam shelf. I didn't want a bird's nest of extra wire, so I shortened the leads from the ESCs and the motors. I also had to lengthen the ESCs' battery leads to reach the battery compartment. In deference to the manual, I decided to run my batteries and ESCs in parallel rather than independently. To accomplish this, I connected the two batteries with a parallel adapter and soldered the battery leads from both ESCs to a single Deans Ultra Plug connector.

Hobby Lobby claims that you can run the



Above left: Hobby Lobby's recommended motors for the Executive Jet fit the EDF units perfectly. The foam nacelles are held in place with tape to facilitate maintenance and repairs. Right: a shelf made of scrap foam makes a handy place to mount the receiver and separate it from the two ESCs. Their rearward position helps establish the CG.

BECs of both Super Flying Model ESCs in parallel and they will adequately power the onboard servos. I didn't challenge that claim, and I used a ParkBEC from Dimension Engineering instead, as I have confidence in its performance because of previous projects.

I installed a Hitec HS-55 servo in each wing panel to control the ailerons. The servos were a snug fit in the molded servo pockets, so I just added a couple of small drops of epoxy to secure them. I made sure that both of the adjustable control horns were set to the same length before I attached the pushrods. The wing has molded channels for the servo wires, but I had to bore a hole to allow the servo wires to pass through to the top of the wing inside the fuselage. Once again, I used a low-heat soldering iron.

Before installing the horizontal stab, I noticed that one of the elevator hinges had been installed off-center and had weakened the surrounding foam. I centered the hinge and patched the cracked foam by laminating the area

with a small piece of 1/32 plywood.

The molded recess on the fuselage was considerably larger than the base of the fin. I glued the stab into place and shimmed it to achieve the proper alignment by putting balsa scraps in the gap. Gorilla Glue gave me plenty of working time and also helped to fill the gaps, as it expands as it dries. After the glue had dried, I used lightweight drywall spackle to finish the joint.

Each elevator half is driven by a separate flexible pushrod. There are three things to watch for here: make sure that the elevator pushrods do not impede the rudder; the pushrod sleeves must be secured to the fuselage at several points to prevent them from flexing; and the S-curves in the elevator pushrods create a lot of friction. Even after I had added oil to the inside of the sleeves, my SR9320MG elevator servo did not center properly. To overcome this, I used the innermost hole of the servo arm and increased the servo throw using the endpoint adjustment on my transmitter. This provided the needed torque and maintained adequate control surface movement.

The completed Executive Jet is a real eye-catcher. I appreciate the simple, refined trim scheme. Once in the air with the retracts tucked away, the Executive Jet could easily be mistaken for a high-priced taxi whisking the rich and famous off for the weekend. That's the image that puts me one step ahead of my old college buddies. We both get to experience the thrill of exciting jet flight, but after I land my jet, I don't have to clean the lavatory! ☺

Links
Dimension Engineering,
www.dimensionengineering.com

Hobby Lobby International, Inc.,
www.hobby-lobby.com,
(615) 373-1444

For more information, please see our source guide on pg. 161.

The Lear Legacy

If every tissue is a "Kleenex," every photocopier a "Xerox" and every cotton swab is a "Q-Tip," then all corporate aircraft are "Learjets." Perhaps that's why this model bears a striking resemblance to the Lear 45. There's even an "LJ-45" sticker on the wing.

The Learjet history reads like many other aviation chronicles: a man with a vision, success, failure, buyout, repeat. The truly noteworthy aspect of the Lear story is the man with the vision, William Lear. The Learjet is just one chapter in the life of one of those men who were pivotal to the technological advance of aviation during the 20th century. Bill Lear developed aircraft radios, navigation equipment, autopilots, automatic landing systems and other aircraft products over several decades. He didn't limit his genius to aviation. He also developed the first practical car radio (and spawned Motorola) and the eight-track tape player. When he died at 76 in 1978, he had more than 150 patents to his credit—not bad for a guy with only an 8th-grade education.

Technical achievements aside, Bill Lear's life story reads like a novel with unexpected twists and turns. Like many geniuses, he was also considered somewhat eccentric. Through his many business ventures, he built and squandered several fortunes. His personal life was no less exciting, but I'll let the book tell you the rest.

Proof that the apple doesn't fall far from the tree: Lear's first son, Bill Lear Jr., created his own aviation legacy. At the age of 17, he flew his P-38 in the Cleveland Air Races and performed aerobatic routines at airshows. He went on to fly the latest fighters in the U.S. Air Force inventory and even took part in some covert operations.

If your aviation library is light on Lear, you owe it to yourself to learn about this iconic and dramatic American family.



The vertical stabilizer required a few balsa shims to get a snug fit in the fuselage. I applied a fillet of drywall spackle to hide the evidence.



A low-wattage soldering iron is useful for making clean holes through the wing for servo wires and pushrods. Just make sure your workshop is well ventilated.