HOBBY LOBBY

Super Diamona 2400

A scale motor glider with style

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After seeing several Dimonas at the local airport and at Wurtsboro Glider Port, I thought I would like to own a real one, but they are a big chunk of cash. Instead I flew an economical Rutan Long EZ for years. Motor gliders are the flying equivalent of a motorized sailboat, and there is an appeal to traveling on nature's air currents. A sailboat is a means of travel slower than a bicycle, but a motor glider is real transportation; you can even travel cross-country circling in thermals. With the price of gasoline these days, a motor glider might be practical transportation!

The full-scale Super Dimona is made in Austria by Diamond Aircraft Industries and is powered by a four-cylinder Rotax turbo charged engine with 115 HP. In the US, it is an FAA-certified airplane, and is not an experimental aircraft.

The flying weight of a real Dimona is about 1700 pounds. With 115 HP, that gives it a power loading of about 15 lb./HP. The AXI motor in the model with 447 watts is equal to about .6 HP, making the model's power to weight about 2.6 times as high, at 5.7 lb./HP. The power isn't scale, but it provides great RC performance.

The appearance of the Hobby Lobby Dimona is close to scale but not exact. The planform of the wing and tail is slightly different. Hobby Lobby doesn't say what the airfoil is, but I doubt it is scale

SPECS

PLANE: Super Dimona 2400
MANUFACTURER: Hobby Lobby
DISTRIBUTOR: Hobby Lobby
TYPE: Electric-powered motor glider
FOR: Intermediate to advanced pilots
WINGSPAN: 94.5 in.
WING AREA: 625 sq. in.
WEIGHT: 54.7 oz.
WING LOADING: 12.6 oz./sq. ft.
LENGTH: 43 in.

RADIO: Four to five channels required; flown with a Hitec Optic 6 transmitter, Hitec Electron 6 receiver, 2 Hitec HS55 and 2 Hitec HS322HB servos

POWER SYSTEM: AXI 2820/10 outrunner motor, Jeti JESAP40W ESC, FMA CellPro FM32003 3S 3200mAh battery and AeroNaut 10.5x6 prop

FULL THROTTLE POWER: 43.2 amps, 447 watts; 8.2 W/oz., 130.7 W/lb.

TOP RPM: 9,600

DURATION: 30 minutes motor on, up to several hours soaring

MINIMAL FLYING AREA: Flying field or smooth football field or larger

PRICE: $189.00, kit only

COMPONENTS NEEDED TO COMPLETE: Motor, radio system and four servos, ESC, battery and prop.

SUMMARY

I have never seen anything like the Dimona at an RC flying field. I've seen scale sailplanes but never a scale motor glider. The Dimona is a very nice scale airplane and also an excellent intermediate-level motor glider, especially if you fly at a field with a smooth runway.

PHOTOS BY DAVID MIELKE

AIRBORNE

I first flew the Dimona from a grass field. The first few takeoffs and landings were exciting. Unlike a tail dragger with gear stuck in the grass, the tricycle gear keeps the airplane from flipping over on the prop at the start of the takeoff roll. The AXI has so much power the Dimona would probably take off even if it had three skids instead of wheels.

Even with over an inch of prop clearance, on the first flight from bumpy grass, the spring nose gear flexed down enough that the prop mowed the grass a bit. The result was surprisingly realistic motor noise from the airplane. The balance tape on the prop tip had come loose and sounded something like playing cards on a kid's bicycle. Not knowing what the noise was, I landed sooner rather than later, and on landing, the nose gear spun around backwards and stopped the plane abruptly.

The next flight, I took it to a paved runway, and with 15 to 20 mph winds, it leaped into the air. It was so windy that I couldn't really get a feel for the airplane, but it did handle the winds very well, and the grounded pilots watching were impressed. I wasn't too impressed with my landing; I thought I had touched it down fairly gently on the mains, but there were bad noises. The nose gear spun again, and a tip touched the pavement. The noise was actually the wooden main gear mount coming unglued and the tip hitting. I repaired the mount as described below.

The next flights were from a closely mowed grass field, and the takeoffs and landings were as expected after tightening the nose gear setscrew and fixing the main gear mount. Even with a slight tail wind, the AXI powered across the field until it got the T tail flying, and immediately on rotation it leaped into the air. With 440 plus watts and an efficient airframe, the Dimona's climb performance is amazing. I could hear the guys behind me saying, "look at that thing climb".

Once airborne, on a decent day, I could really evaluate the Dimona's performance. The motor's thrust line is almost right-on as there is only a bit of down trim and just a bit of yaw with power. The motor is mounted so close that it probably isn't worth messing with the thrust line or radio mixes.

The Dimona has quite a speed range considering the fixed gear and prop. It flies fairly slow and will cover lots of sky in a hurry. The minimum flying speed is just a bit on the fast side for a sailplane. Yet compared to similar span gliders with built-up wings, the Dimona's glide performance is definitely better than most in spite of the prop and gear.

As with any long-wing, short-tailed sailplane (short coupled), turns require a bit of finesse, rudder and elevator to make nice coordinated turns. Flying a turn is exactly like the full-scale sailplanes that I have flown. I didn't get a chance to thermal the Dimona, but with plenty of control authority, and neutral spirally stability, it should be a joy. Just a bit of up trim should be all it will need to thermal.

The controls are well harmonized, and I always like how T-tails fly. I don't think I can mess with the CG as it is already bit aft of Hobby Lobby's location even with the battery full forward. Moving it more aft would make it not sit on the nose wheel. The CG did seem about right, just a bit of down elevator when flown inverted and good tracking on a down or up line.

The Dimona will fly graceful sailplane aerobatics. Loops are large power on or off, and it doesn't pick up speed on the down side too quickly. Rolls look great as long as you pitch it up right and give it some down elevator when inverted at the top of the ballistic curve. The roll rate is excellent considering how long the wings are.

Without the full-scale airplane's spoilers, the Dimona is a bit hard to get down; it just keeps going and going. You must come over the fence low and slow not to overshoot the runway. Save some battery capacity for a go-around just in case. To land, you also want to keep the wings level and gently flare, touching on the mains first. Hold it off inches above the ground until it will not fly anymore. It stops pretty quickly on grass, but you do have to keep steering the nose wheel until stopped. I have never flown a real Dimona, but with many hours in sailplanes and my tricycle gear Long EZ, I would say that the little Dimona flies very much like the big one.

in order to fly well as a model. The fuselage is very close to scale, complete with seats and an instrument panel. The red graphics are attractive and very scale. Overall, the Hobby Lobby Dimona is realistic looking, and you wouldn't know the difference without studying a real Dimona.

Large RC gliders usually fly better, and with a 95-inch wingspan and three axis controls, I expected the Dimona would perform. I did wonder what the non-folding prop and fixed gear would do to performance. A real Dimona has a feathering prop and fixed gear. I suspected that the steerable tricycle gear would work well but not on some of the rough grass fields where I fly. I was anxious to fly it and find out.

PUTTING IT TOGETHER

The model is an ARF and is beautifully made. The wing is built up, with nicely done covering. The fiberglass fuse has a perfect gel coat finish, and the scale decals are pre-applied. Following the illustrated instructions, the assembly took only a few evenings. Most of the work involved screwing things in place, not gluing. The only thing that had to be glued was the battery tray as its location depends on the choice of power system. All the hardware was supplied, and the pushrods were pre-installed.

The wide scale fuselage made the motor and servo installation very easy; I could actually get both hands inside to do the work. Even though the manual indicated otherwise, the motor mount was pre-installed and

The lower servo controls both the rudder and the nosewheel; the upper servo actuates the elevator. Note the ample room in the fuse.

drilled for the AXI. The servo tray was also installed and ready to screw in standard sized servos. The wing servos were easy with a screw-in installation instead of glue.

I didn't mount the canopy with screws, as suggested. Instead I used Scotch 33 white electrical tape to give the scale appearance of a canopy frame and to hold the canopy to the molded cockpit. The tape worked out very nicely and was an easy and attractive way to hold the halves together. Rather than screw the canopy in place, I fabricated two front clips with .030-inch piano wire and put a hook on the back for a rubber band to the spar joiner. The clips and rubber band make for a fast and easy way to get at the battery, and it ended up being little extra work and looking better.

TIPS FOR SUCCESS

I was surprised at the static power measurements with the motor pulling just above its 60-second maximum at 43.2 amps. I ran the numbers with MotoCalc software, and the program simulation came up in that ballpark but about six amps fewer. Even at that current, the new FMA super high discharge rate 3S 3200mAh CellPro battery measured a strong 10.5 volts. This pack has very low internal resistance for extra power and long pack life. Running the motor intermittently at these power levels should be OK as the Dimona will be at soaring altitude within a few seconds. If you plan to fly the Dimona mostly power on, you probably want to prop it down a bit. For continuous motor runs, you may also consider cutting out all of the scale vent openings for better cooling.

If you use the same power setup, it is light, so make sure that you mount the battery tray as far forward as possible. The battery ended up directly aft of the nose wheel pivot rod. When installing the nose wheel pant, look at the alignment installed on the model before making holes to mount it. I ended up with the fairing high in the front, but the scale appearance is actually low in the front. This error may be good for my grass operation, however.

The elevator push rod makes a pretty sharp S-bend getting up through the fin to the elevator. I had a problem with binding, mostly fixed by pulling out the pushrod and greasing it with some Teflon lube. Check the wing for warps, and use a heat gun on the covering to get it dead straight or with a bit of tip washout before flying. Screw the winglets on carefully; the screws are a bit long and may poke through the top of the winglets slightly.

On the first several flights, I had some interesting landings when the nose gear spun around backwards. The control horn was slipping on the nose gear shaft even though I tightened the Phillips set screw as tightly as I could. Either put an Allen head screw in and torque it down, or use a pair of pliers on the Phillips. I did not put a flat on the shaft, as I still wanted some protection for the servo.

On the second landing, the wooden mount for the metal main gear came unglued from the fiberglass fuselage shell. I think that the gear needs to be tied structurally to something besides the fuselage shell. An easy fix is to glue some 1/8-inch ply between the wing spar joiner and the top of the gear leg mount. I used a mix of 30 minute epoxy and cotton flox. The wood couples the load to the spar. The plywood was also glued to the back edge of the servo tray to stop the tray from flexing with servo loads.

CONCLUSION

If the experience of flying a full-scale Dimona appeals to you, I think that the Hobby Lobby model is as close as you are going to get. Seeing how airplanes fly is half the fun with RC, and this model is also fun because you get to experience the tricycle gear setup on a sailplane. I am definitely looking forward to flying the Dimona much more, especially in some good thermals. ✪

Links

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

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

FMA Direct, www.fmadirect.com, (800) 343-2934

MotoCalc, www.motocalc.com, (519) 638-5470

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