

The Super Decathlon's traditional red, white and blue shooting-star color scheme first drew my attention. Its high wing configuration limits its maneuverability only slightly, and it retains that classic lightplane outline. The full-size Super Decathlon has an interesting lineage that began with the Aeronca Champ. Then came the Citabria to satisfy pilots' aerobic urges and after that, the Decathlon with its new oil system and a semisymmetrical wing for sustained inverted flight and more aggressive outside maneuvers. The Super Decathlon incorporates a larger 180hp engine and a constant-speed propeller.

The RC Guys 1/4-scale ARF features many scale details and looks very like the real thing. The kit comes with everything except the electronics and engine. I bought a Du-Bro gas conversion kit for the fuel tank and replaced the metal throttle linkage with a Sullivan nylon pushrod to isolate the engine from the radio gear. Those were my only hardware changes.

The Super Decathlon has a hinged door to allow interior access, and the Plexiglas windows and Lexan windshield are all lightly tinted to nicely obstruct the view of the internal equipment. The air-foiled aluminum wing struts feature fiberglass cuffs to neaten the front strut ends where they meet the wing and fuselage. The cowl and wheel fairings are also fiberglass.

The kit includes an assembled, high-quality aluminum and stainless-steel tailwheel assembly that comes ready to install. Bracing hardware is included to reinforce the tail for aggressive maneuvers. The wings are mounted on an aluminum wing tube and secured with nylon bolts. The model is expertly covered, and the decals and trim have been done for you. The downloadable manual is kept current with any updates to the kit. The last update was made just a few weeks before I started.



# RC GUYS SUPER Decathlon



## Get into giant-scale with this classic scale aerobat

by Jack Tracey



The oversize control linkages and bracing wires provide plenty of control and security during aggressive aerobatics. The aluminum and stainless-steel tailwheel is a nice scale detail and comes ready to install.



The functional scale door makes accessing the equipment at the field very convenient.

### SPECS

**PLANE:** Super Decathlon

**MANUFACTURER & DISTRIBUTOR:** RC Guys

**TYPE:** 1/4-scale civilian aerobat

**FOR:** Intermediate & experienced pilots

**WINGSPAN:** 98 in.

**WING AREA:** 1,558 sq. in.

**WEIGHT:** 16.3 lb. (260.8 oz.)

**WING LOADING:** 24 oz./sq. ft.

**LENGTH:** 63 in.

**RADIO:** 5-channel required; flown with a Futaba 7C FASST transmitter, Futaba R617FS receiver, 1 Futaba S9206 servo for rudder, 4 Futaba S3305 servos for elevators and ailerons, 1 Futaba S3010 servo for throttle

**ENGINE:** 90 - 160 2-stroke or 1.20 - 2.70 4-stroke glow; 23 - 40cc gas; flown with Fuji Imvacc BT-34 EIS gas engine

**PROPELLER/SPINNER:** Zinger Pro 18x10 prop, 3 1/4 American Pioneer spinner

**TOP RPM:** 6,900

**FUEL:** 89-octane gasoline mixed 100:1 with Fuji Imvacc 2-stroke oil

**ONBOARD BATTERY:** Hydrimax 6V 4200mAh NiMH

**PRICE:** \$399

**COMPONENTS NEEDED TO COMPLETE:** Radio, fuel, prop, spinner, gasoline-compatible fuel tubing, 2 24-in. servo extensions, 2 18-in. servo extensions, 2 12-in. servo extensions

### SUMMARY

The RC Guys Super Decathlon ARF offers a great introduction to 1/4 scale and gas power. This is an absolutely complete package that is easy to assemble and can be put together at the field in less than 5 minutes. All the hardware is included, and it is of exceptional quality. Powered by the Fuji Imvacc BT-34IES engine, this great model offers a complete repertoire of scale aerobatics.

## TIPS FOR SUCCESS

I was surprised that the assembly of this big model was no more challenging than building a typical high-quality 40-size ARF. Of course, there were some moments of frustration and challenge along the way, and I hope the few tricks I learned save you some time.

Read through the instructions before you begin. I did, and I immediately changed the build order. I installed the main landing gear first. The model's belly is round and rolls on the table. After installing the gear, I went back to the first few steps in the manual and attached the horizontal and vertical stabilizers. There was a  $\frac{3}{16}$ -inch gap between the vertical fin and the horizontal stabilizer. I debated adding a shim to the fin, but instead, I just trimmed the leading edge where it seats against the fuselage. This left a recess at the leading edge, but the covering you remove from the skylight can be used to hide this.

I installed the optional flying wires to strengthen the tail. The nylon clevises need to be drilled out to fit the brass rigging couplers. Keep the drill motor handy to screw the 12 couplers into their clevises. I might have had blisters if I had screwed them by hand. There is more than enough wire but only just enough aluminum crimps. I messed one up. I used one of the tailwheel screws with a larger washer to secure the flying wire at the fuselage. This worked so well that I recommend it regardless.

## FUJI IMVAC BT-34-EI ENGINE

DISPLACEMENT 1.95ci (34cc)

RPM RANGE 1,200 - 10,000

OUTPUT 3.2 hp @ 11,000rpm

WEIGHT W/MUFFLER 3 lb.

INCLUDES Muffler, prop hub, Champion RCJ6Y spark plug, Walbro WT407 carburetor

PRICE \$430



The Fuji Imvac BT-34 EI engine incorporates an electronic ignition system with automatic timing advance for easy starting and a dependable low idle. The sealed ignition module is vibration-resistant. The engine comes with a spark plug. A spring starter, smoke muffler and different length prop flanges are available as options.

The cast mounting flanges make installation easy. The holes in the choke and throttle levers are larger than standard clevis pins, so I slid a piece of shrink-tube over the levers before I attached the pushrods to provide damping and prevent linkage slop.

This engine offers easy starting, dependability and power. It usually starts on the third flip. The carb is adjusted at the factory and should need only a slight tweak to suit your local conditions as it breaks in. The idle, transition and power are all excellent. Overall, this is a great choice for a gas engine.



## AIRBORNE

I ran the Fuji at home before its first trip to the field. The carburetor is side-mounted and sits flush with the cowling, so it's easy to squirt a little prime and see when the engine is getting fuel. With fuel in the carburetor, the engine popped immediately and started with just three flips. I ran through the first tank before adjusting the high-speed needle to get it running smoothly at high rpm. Leaning it  $\frac{1}{8}$  turn gave a smooth transition and an engine I could count on.

The large rudder and steerable tailwheel give plenty of control when taxiing, and the takeoff run is smooth and uneventful with about a 50-foot roll into a gentle breeze. The Fuji 34 has plenty of power for a quick takeoff and a pretty steep climb.

I needed a lot of aileron trim on that first flight, and when I landed, I noticed my ailerons were trimmed about  $\frac{1}{4}$  inch from neutral. This puzzled me at first, and then I realized that any imperfection in the strut length or mounting can cause a major twist in the wing. This is easiest to fix by shimming the outer end of the struts to correct the wing twist.

The Decathlon does not need rudder in turns, but adding some does tighten the turns noticeably. This model can slow down quite a bit before it stalls. It drops its nose smoothly without wobbling a wingtip, but it does take quite a bit of altitude to get it back to flying.

My flying buddy Jonathan Pope recently met me at the field so that we could test its aerobatic abilities. We were both pleasantly surprised: this plane snap-rolls very well. Jonathan had it snapping with three full rotations within about 30 feet! Be careful with this maneuver, and practice it up high to learn the recovery. The snaps transition into a spin as the model slows. Inverted flight is similar to upright except for a slight push on the elevator stick. The roll rate is not blinding fast but it is not too slow either. The different color schemes on the top and bottom of the wing really help with orientation at higher altitudes.

Landings are so easy: the large wing provides plenty of lift, and it slows down well as you float in. You will need a dependable low idle, and the Fuji's electronic ignition delivers.

The Super Decathlon handled just about any trick we threw at it. It doesn't hover with this engine, but neither does the prototype. This airplane looks great just floating around, and you can bring out its wild side whenever the urge strikes.

The fiberglass wheel pants have a plywood insert to accept the blind nuts. This insert was not attached very well, so I mixed a batch of epoxy to fill the voids and create a fillet around the wood.

The kit features large, point-style hinges for all of the control surfaces; secure them with epoxy or canopy glue. Use light oil or petroleum jelly to avoid binding the hinge joints.

High-torque servos are a necessity in a model of this size. Metal gears increase durability. I bought a package of extra-long heavy-duty Du-Bro servo arms to replace the shorter stock servo arms and to reduce the likelihood that play may develop over time.

This model can be flown with a number of gas, glow, or electric power sources. I chose the Fuji 34 EI gas engine because it was in the middle of the suggested power range and it has electronic ignition. This engine fit in the cowling very well, but it was a bit too long. I cut out part of the  $\frac{1}{2}$ -inch ply firewall to clear the stock muffler. I used rubber-backed aluminum flashing from Home Depot to reflect the heat back from behind the firewall. The structure that supports the engine is well above this recess.

## CONCLUSION

This plane is already a favorite in my hangar. I really appreciate how little time it takes to get it from the back of my Honda Pilot to the sky and dancing among the clouds. The Fuji Imvac engine is an excellent match for the airframe. If you are tempted to step up to large airplanes, this  $\frac{1}{4}$ -scale Super Decathlon just might be the one! **O**

## Links

Du-Bro, [www.dubro.com](http://www.dubro.com), (800) 848-9411

Futaba, distributed exclusively by Great Planes Model Distributors, [www.futaba-rc.com](http://www.futaba-rc.com), (800) 682-8948

Sullivan Products, [www.sullivanproducts.com](http://www.sullivanproducts.com), (410) 732-3500

Fuji Imvac engines, distributed exclusively by Great Planes Model Distributors, [www.fujimvac.com](http://www.fujimvac.com), (800) 682-8948

Hydramax Batteries, distributed exclusively by Great Planes Model Distributors, [www.greatplanes.com](http://www.greatplanes.com), (800) 682-8948

RC Guys, [www.rcguys.com](http://www.rcguys.com), (519) 756-1110

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

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# SUPER DECATHLON

An easy-to-fly **giant semi-scale sport model** that is ready for aerobatic action at a moment's notice

WHILE BROWSING THE AISLES of this year's Toledo Show, a giant-scale Super Decathlon caught my eye at the RCguys booth. I quickly accepted their offer to send in an advance production model for review. The full-size Super Decathlon was produced by Bellanca during the late '70's and later by American Champion. It's designed for aerobatics and aerobatic training with a balance between super responsive and powerful Extra types and the stately Great Lakes biplane.

The model is constructed primarily of laser-cut balsa and ply resulting in a very lightweight airframe. The eye-catching covering scheme is expertly applied and had only a few minor wrinkles. The kit contains the fuselage, plug-in wings, tail feathers, landing gear, complete hardware package, fuel tank, wing struts, motor mount, tinted



The operating pilot's door features a spring-loaded latch. I installed the radio switch inside the cockpit.

windows and wheels. Also included are painted fiberglass wheel pants, cowl and strut cuffs.

Anyone who has assembled a few ARFs will easily be able to assemble the Super Decathlon. Since I was given an advanced

## SPECIFICATIONS

**MODEL:** Super Decathlon ARF

**DISTRIBUTOR:** RCguys.com

**TYPE:** Semi-scale aerobat

**WINGSPAN:** 98 in.

**WING AREA:** 1,558 sq. in.

**LENGTH:** 63 in.

**WEIGHT:** 15 lb.

**WING LOADING:** 22.18 oz./sq. ft.

**POWER REQ'D:** .90 to 1.6 2-stroke, 1.20 to 2.70 4-stroke, 23 to 40cc gas engine

**RADIO REQ'D:** 4-channel w/6 servos

**PRICE:** \$400

## HIGHLIGHTS

- Striking scale looks
- Excellent-quality construction and covering
- Outstanding flight characteristics
- Easy to assemble

production model, the instructions were not yet available, but they will be available on the Web when the kits ship. Even without the instructions, I didn't encounter any problems during assembly. By leaving the windows off until the end of assembly, access to the huge fuselage interior is very good and the fully operational right-side door also helps. The plane has no bad flying habits and would make an excellent first giant-scale project. Pilots who are proficient at flying sport planes will easily be able to fly the Super Decathlon.

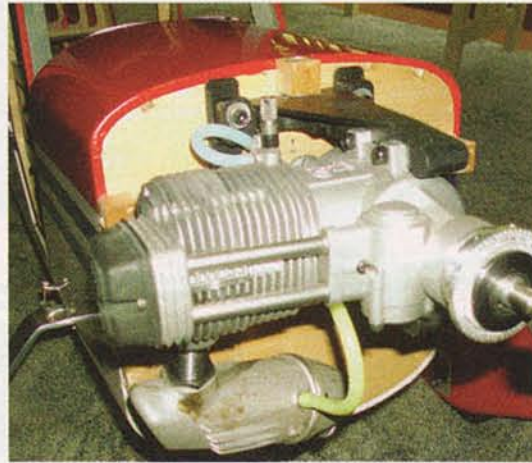
## UNIQUE FEATURES

All the flying surfaces are drilled for the included pin-type hinges. Heavy-duty trumpet-style control horns are included and work well. After drilling the hole for the





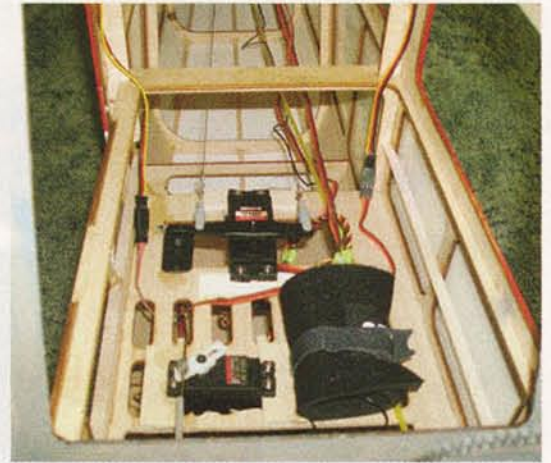
horn, I hardened the area with thin Mercury Adhesives CA glue. Each aileron servo is mounted on a preassembled hatch with only the control horn protruding. The split elevators are controlled by individual servos mounted in the tail I chose to replace the aileron and elevator linkages with 4-40 hardware to make the plane IMAA legal, although the included hardware appears adequate. The plug-in wings are secured with an aluminum tube and retained with thumb screws through the inside cabin. I epoxied the horizontal and vertical stabilizers into position and added some triangular balsa stock to increase the gluing area. The rudder is actuated by pull-pull cables, and I used an HS-5745MG Digital 1/4-scale servo for the rudder. For the remainder of the control surfaces, I used HS-5645MG Digital Super Torque servos. For a plane of this size, strong servos should be used, and these fit the bill perfectly. Fittings and braided cable are also included for tail flying wires. According to RCguys, the flying wires should be installed if you intend to do any



I fuel-proofed the firewall with Z-Poxy finishing epoxy before installing the O.S. FS-200S 4-stroke engine.

snap-type maneuvers or hard aerobatics. For more relaxed flying, they are not required.

I installed the O.S. FS-200S 4-stroke engine on the included composite adjustable mount after I had measured the distance from the front of the cowl to the firewall. I then made the cutouts for the cylinder head and muffler. The big O.S. shook somewhat with the composite mount, and if a larger engine is used, an aluminum mount should be considered. I



Even the large Hitec HS-5745MG 1/4-scale servo looks lost inside the huge fuselage.

assembled the fuel tank and installed it onto the shelf using a foam block under the tank to bring it to the correct height. The beautiful polished aluminum landing gear is threaded for the six mounting bolts and slides through slots in the fuselage. The Haige-style tailwheel assembly is very robust and should hold up well. It is drilled for two mounting screws, but I drilled an additional hole for an extra screw.

The Super Decathlon features some nice

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## In the Air

Field assembly of the Decathlon only takes minutes; install the plug-in wing panels, and attach the wing and jury struts with the 4-40 bolts. For the initial photo shoot, I didn't have the flying wires installed, but I added them later so I could wring it out. The O.S. FS-200S was broken in for the concurrent engine review and set on the rich side. It fired up with the first blip of the starter each time with no hint of kick-back. This is one of the most mild-mannered tail-draggers I have flown. Ground handling is very good with up-elevator, and the takeoff roll was very straight with almost no rudder correction. Landing rollout was equally straight with only minor rudder inputs. The takeoff roll used about 100 feet of the grass runway with the engine running rich and the temperature well into the '90s.

### General Flight Characteristics

**STABILITY** The Super Decathlon is very nearly neutral in stability. While it isn't a trainer, it is very easy to fly but retains enough maneuverability for lively aerobatics.

**TRACKING** The plane tracks very well. As with most high-wing planes, turns should be made with some coordinated rudder input. The Super Decathlon's rudder is very effective and only needs a small amount in the turns.

**AEROBATICS** The O.S. provided very scale-like speed and sound. The model is capable of loops, rolls, hammerhead turns, snap rolls and spins. Outside maneuvers are also within its capabilities thanks to its

nearly symmetrical airfoil. With this engine, proper energy management is necessary as it doesn't have the power-to-weight ratio of some of the extreme aerobatic aircraft.

**GLIDE & STALL PERFORMANCE** Glide performance is excellent. The plane stays in the air with very little power. Stall is also very mild, and lowering the nose gets the plane flying again.

### Pilot Debriefing

I flew the Super Decathlon at about  $\frac{1}{2}$  throttle for cruising around. Adding more throttle does not add much speed but is needed for aerobatic maneuvers. There were no surprises when it came time to land the model. It takes quite a bit of room to land as it tends to float and doesn't want to stop flying. Make sure you have a reliable, low idle as the O.S. did or you will eat up an excessive amount of runway.

The Super Decathlon, like its full-scale counterpart, fulfills its mission of an easy-to-fly sport plane with enough aerobatic capabilities to keep things interesting. It has no vices and can be flown for relaxation or excitement. The RCGuys Super Decathlon is a definite keeper!

### CONTROL THROWS

**ELEVATOR:**  $\pm 1$  in. (high); expo 25%;  $\pm \frac{3}{4}$  in. (low); expo 20%

**AILERON:**  $\pm 1$  in. (high); expo 25%;  $\pm \frac{3}{4}$  in. (low); expo 20%

**RUDDER:**  $\pm 2$  in. (high); expo 25%;  $\pm 1 \frac{3}{4}$  in. (low); expo 20%

### GEAR USED

**RADIO:** Futaba 9C transmitter, Hitec Supreme IIS receiver, 4 HS-5645MG digital (aileron & elevators), 1 HS-5745MG  $\frac{1}{4}$ -scale digital (rudder) and 1 HS-425BB (throttle)

**ENGINE:** O.S. FS-200 4-stroke

**FUEL:** Magnum Mach 7 15%

**PROPS:** Top Flite Power Point 18x8

scale touches. The aluminum wing struts are painted and are quick and easy to attach as the blind nuts for the 4-40 attachment screws are already in place. I added a  $\frac{1}{8}$ -scale Hangar 9 civilian pilot figure to a false balsa cockpit floor that I fabricated and tack-glued in place. I painted it with textured paint along with a false rear cockpit floor and rear bulkhead. Using some black screen material, I cut out the front air-intake area of the cowl and glued it into place. I made an instrument panel using my computer, self-adhesive paper and a scanned image. Graphics are provided for

the registration numbers. The Tru-Turn  $3\frac{1}{2}$ -inch spinner adds the final scale detail and adds realism. With the receiver battery pack placed in the fuel compartment, the plane balanced at the main spar without adding unnecessary weight.

### CONCLUSION

At just under  $\frac{1}{8}$  scale, the Super Decathlon makes an excellent giant-scale project with classic good looks and straightforward assembly. I estimate that I spent 40 hours (including a couple of hours my daughter, Jennifer, spent painting the pilot figure)

assembling the plane and adding a few scale details. I'm sure it would have taken me considerably less time if I'd had the instructions.

The completed plane is very impressive both in the air and on the ground. It generated a lot of interest when I brought it to the field for its test flight, and everyone was impressed with the quality and scale looks. The Super Decathlon is an outstanding value for someone who's looking for a giant-scale plane that won't break the bank and is a pleasure to fly. ✚

See the Source Guide for manufacturers' contact information.