BY JOSH BERNSTEIN PHOTOS JON R. BARNES

Author's Opinion

With a class-leading flight-envelope that's as wide as it is deep, the 43-inch Veloxity from Twisted Hobbys will shift your perceptions of what an EPP profile plane can do. Stable in low-and-slow post-stall, precise and couple-free in knife-edge and capable of accelerating vertically faster than many planes can horizontally, the Veloxity gives you the feel of a larger wood plane, with the durability, repairability and short assembly time of a profile foamie. While it's rare that a plane will excel at every maneuver (as no matter the width of its flight envelope, planes are designed with specificity in mind), the Veloxity has come closer to all-around proficiency than most. Transitioning in and out of sport, precision, aerobatics, violent 3D and stable post-stall flight is a seamless process.

TWISTED HOBBYS AND RC FACTORY

Veloxity

EEP 3D PROFILE KIT

High energy 3D profile

NEED TO KNOW

MANUFACTURER: Twisted Hobbys and RC Factory

DISTRIBUTOR: Twisted Hobbys

TYPE: EPP Profile 3D Kit

FOR: Intermediate to advanced pilots

MIMIMUM FLYING AREA: Club or Park field

PRICE: $145.99

NEEDED TO COMPLETE: As an Almost-Ready-to-Fly (ARF) kit, this model requires a minimum four-channel radio system, (4) digital metal gear 14-18g servos, 70-100 gram brushless out-runner (250-450 watts), 30-45A ESC, 3S 11.1 volt 1350-2200mAh LiPo battery and balancing charger.

Across the wide RC flying community there are pockets of highly enthusiastic pilots (fanatics), who follow a particular make, model or class of plane with a reverence and dedication bordering on the unhealthy. Few places do you find this as intensely as the aficionados of profile, EPP, 3D planes from the Florida-based company Twisted Hobbys. In collaboration with the Czech company, RCFactory, Twisted Hobbys has been (for many years now) the vanguard of the effort to squeeze out every possible bit of performance from this highly addictive class of planes.

Twisted Hobbys (TH) brings to the table not only high-quality planes, but a design team that is always looking to expand the reach and depth of their constantly evolving collection. Likewise, when it comes to their team pilots, TH has put together a deep bench that excels at pushing new airframes to the limit (and inducing humility in us mere mortals). Utilizing various densities and thicknesses of highly durable (and repairable) Expanded PolyPropylene (EPP) foam, in conjunction with carbon fiber, wood supports and stiffeners, TH has created a line-up that covers a wide range of shapes and sizes. From the ultra-light 24-inch Mini Edge 540 (weighing in at 90 grams),

Key Features

- The Veloxity utilizes precision ball-links to provide smooth and accurate control geometries.
- Assembly can take as little as two evenings – streamlined by many pre-cut slots and grooves.
- The Veloxity is made from some of the thickest and stiffest EPP available.
- The recommended power package uses the widely owned and available 3S 2200 LiPo.

Pros

- A unique graphics theme that looks great and stands out
- A wide flight-envelope for all types of flying
- Impressive vertical acceleration and power
- Couple-free knife-edge tracking

Cons

- Moderately higher wing-loading results in slightly reduced post-stall stability

IN THE AIR

Eager to get the Veloxity airborne, I raced to the field on the first clear day after completing the build with a handful of batteries. With morning fog keeping the visibility to a minimum, I followed my standard pre-flight routine: range-testing, direction, deflection, bind-free control surface checks and – considering the recommended power package's crazy levels of thrust – propeller tightness. This was a little difficult to do one-handed, given the other hand was busy keeping the growing mob of drooling pilots from running off with the plane. To say the Veloxity was popular would be an understatement.

Setting the plane down, I taxied around the runway, getting a sense of its ground-handling ability. With no tail-wheel, the Veloxity's fiberglass tail-skid seemed happy to slide over the hard-packed track without digging in too deeply. With its massive rudder, steering simply isn't an issue. That said, should you plan on repeated take-offs and landings on hardened surfaces, drilling a small hole in the tail-skid and installing a lightweight wheel wouldn't be the worst idea. Intending to bring the throttle up to full, I was surprised to see the plane lift off at half-throttle and in less than 20 feet. Two clicks of aileron trim later and the Veloxity was flying straight and level, as if I was just along for the ride. Starting with low/precision rates, I began the getting-to-know-you process. While I try to make it a practice to explore a new 3D plane's sport and precision mannerisms first, having so much power on tap made it difficult to restrain myself from immediately jumping in to 3D shenanigans.

Keeping my foot light on the gas, I focused on flying the plane as you would a trainer and was pleasantly surprised that you could drive it's upright or inverted. Following the recommended CG (275mm back from the nose), the plane flew almost hands-free in either orientation. Rolls were axial and could be performed slowly, pointedly (4-point or 8-point), or drill-fast. For fans of precise slow-rolls, the Veloxity only asks for the tiniest amount of elevator and rudder correction to keep the nose tracking level and true. Even with reduced rates, the plane's yaw authority is remarkable and precise hammer-heads ("stall-turns" to our friends across the pond) are just one of the many sport maneuvers this 3D animal is capable of. After a solid six minutes of mixed-throttle flying, my timer began yelling at me. After ignoring it for at least another minute, I relented and brought the Veloxity in for a landing. Regarding landings, the Veloxity can be flown in for a scale landing or – if your 3D skills are sufficient – a harrier landing. Either way is stress-free and easy.

With my "responsible" flight out of the way, it was time to explore the Veloxity on high-rates. Changing batteries (which takes just seconds, whether you Velcro/strap the pack to the vertical fuselage or cut a slot just in front of the faux canopy), I prepared to test the plane's stall characteristics. Following an exhilarating up-line, I brought the Veloxity to stall, pulled full up-elevator and admired the stable, level sink rate. Tempting as it was, I chose to be prudent and not continue the "elevator" down to a landing (though with the lightweight, flexible, and strong carbon-fiber landing gear, it would have been exceedingly easy). As expected with a "pure" 3D plane, both upright and inverted elevators were extremely stable and the Veloxity showed no signs of dropping a wing.

While the model is surprisingly stable (considering its heavier weight), the fact that it flies more like a 48-inch wood aerobat will be a positive for experienced pilots, but may require a learning curve for first-time 3D flyers. Low and slow post-stall flight requires quicker hands and subtler corrections when compared to the floatier, lower wing-loaded TH models. The Veloxity – simply put – isn't your father's Oldsmobile.

Despite the wide flight-envelope, like most planes, the Veloxity excels at certain maneuvers. With the plane's large side-force-generators, massive rudder and wide vertical fuselage, the Veloxity was right at home in knife-edge (KE) flight. Having just flown a plane that required full-throttle and most of its rudder deflection to keep the nose up in KE, I found it took me a few passes to get accustomed to just how little top-rudder the Veloxity asks for. I experienced no coupling issues (requiring no mixing) and, after spending most of a flight flying stable KE patterns, I had the fleeting thought that the Veloxity could be purchased solely as a KE trainer (though that would be a little like buying a Corvette just to practice shifting a stick).

Perhaps it's the extra weight or some secret magic powder Cody Wojcik added during the design process, but I found the Veloxity to be one of the most stable prop-hangers I've flown. Torque rolls are tight and as simple as relaxing the ailerons and allowing the motor's torque to rotate the plane. I generally try to stay away from low hovers with tail-touches during maiden flights, but with the Veloxity it was just so inviting. In addition, with the wing-sized vertical and horizontal fuselages, and the thrust-line perfectly bisecting the airframe, the Veloxity seems purpose-built for rolling maneuvers. Should you be one of the rare few capable of rolling harriers and rifle rolls, I would suggest starting with a much reduced aileron rate and work up from there. Rolling harriers are axial and require a surprisingly small amount of rudder and elevator correction. Increase throttle and, if your "stir" is fast (and accurate) enough, you'll be rewarded with some amazing rifle rolls.

With the plane's extra mass, excellent pitch-authority and solid post-stall stability, the Veloxity was a natural when it came to positive or negative snaps. In particular, the plane excelled at the ever-popular snap-to-hover maneuver. Whether puttering along or entering at speed, a quick flick of the sticks (full up-elevator – to break the nose and induce stall – followed near-instantaneously with rudder/aileron in the same direction, and then a correcting opposite rudder input to keep the tail locked to the ground), and I was consistently rewarded with a blur of movement, followed by a stable hover. Punch out from that hover, push the nose over, kill throttle and you can float back to earth in a stable inverted elevator. The Veloxity simply excels at rapid transitions from straight-line rocket-ship, into a violent tumbler, then finally into a stable post-stall floater.

to the massive 48-inch Extra 300L (tipping the scales at close to 900 grams), to the ungainly-looking (but wickedly-performing) 43-inch Turbo BIG Beaver, TH has something for every pilot and environment. One of the benefits of the wide-ranging TH line-up is that it allows for a steady progression in size, without trading off on performance. It is common for pilots new to 3D to start off with a 32-inch Crack Yak, or MXS-C (on 2S, then 3S), then move up to the terrific 39-inch Edge or Extra and then eventually on to the incredibly stable 48-inch series. This progression provides ample opportunity for fans-of-foam to develop new skills and to not just appreciate the planes' durability, but also to explore their near unlimited flight envelopes. Whether indoors or out, as a beginner or an expert, TH planes are like chocolate chips or french fries – it's hard to be satisfied with just one.

In an effort to fill a recent void in their lineup (and in response to requests from customers), Twisted Hobbys handed the design-reigns in the summer of 2015 to Cody Wojcik, a well-known master of all-that-is-RC. Wojcik promptly explored the most twisted corners of his mind and the result is

the awe-inspiring 43-inch Veloxity. Loosely based on the full-scale Velox Revolution 1, the Veloxity was not designed to be merely an up-scaled version of a smaller, proven platform, but instead to serve as an opportunity for innovation. The design team combined some of the thickest and stiffest EPP foam available, a high-degree of pre-fabrication (allowing for the quick installation of various carbon-fiber supports and stiffeners), a wide and aggressive stance and according to TH … "a unique and specialized airfoil designed to be responsive and firm, without giving up stability." Because of the strength and rigidity of the new airframe (carbon fiber supports and spars run throughout, adding an even higher-degree of rigidity to an already stiff and dense foam selection), TH has chosen to overpower the Veloxity to a near-ridiculous level. By shoehorning in a power package that provides terrific performance to the larger 48-inch planes, TH has created something I had yet to experience – a 3S profile 3D foamie that thinks it's a 4S 48-inch wood aerobat. The Veloxity is capable of hovering in your backyard, eating up large chunks of airspace carving fast, precise patterns and performing some of the most aggressive and violent 3D tumbles I've seen from a profile plane. In terms of flight-envelope, the Veloxity has the widest of any Twisted Hobbys plane I've flown.

Considering the "twisted" nature of the plane's performance, it's not surprising that its looks are twisted as well. In terms of the Veloxity's mind-blowing graphics theme, I know three things. First, I love it. Second, trying to analyze what it is gives me a headache. Third, I'm convinced it's a Rorschach test. A combination of white, gray, black, lime-green and bright orange colors surround a central image looking like some sort of spherical Rube-Goldberg mash-up of gears, levers and pulleys. Does it represent the inner workings of an expensive watch? You tell me. Finishing off the unique aesthetics is a rudder adorned with what can only be described as Tinkerbell's wicked and fantasy-themed twin sister. Most importantly – as maintaining visual orientation is paramount with 3D flight – if you can't find the Veloxity in the sky, you're not looking.

ASSEMBLY TIPS

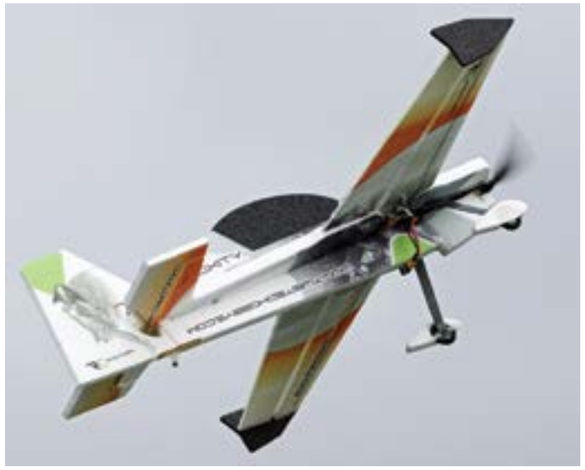
While you won't find a manual included with the Veloxity, TH provides links to a webpage where the build process is laid out in detail, with clear images. Profile plane assembly requires a large, flat area, such as a counter-top, island or dining room table. Parchment or wax paper should be spread out and taped to the work surface. This step should not be skipped, as inevitably there will be an excess of glue and nothing ruins a build project more quickly than trying to peel your beautiful new plane off the work surface, only to leave sections of the graphics behind. As wiping off excess glue will be a repeated task, I suggest keeping many small pieces of paper-towel close at hand.

Several adhesives can be used including foam-safe CA, hot glue, Welder Adhesive or Foam-Tac. Welder adhesive has been the glue of choice for TH planes, though over time it has a tendency to become yellowed or brittle if exposed to sunlight. Similar to Welder, Beacon Foam-Tac doesn't react to sunlight in the same way and has, therefore, become a popular alternative. Whether using Welder or Foam-tac, you should have a minimum of two tubes on hand, as it's not uncommon to use one plus much of a second. One of the benefits to these contact adhesives is the option to apply wet or with a tac-up method. For areas of the build that require making adjustments and corrections after pieces are connected, the wet approach is preferable. (Using sewing needles or pins is an excellent way to hold pieces stationary during the drying period or if handling is necessary before the glue has set). Alternatively, the tac-up method involves applying a small amount of glue to

both pieces, bringing the pieces together and then separating (and repeating several times), before setting the pieces aside. After several minutes you can bring the pieces together for the final fit. A word of caution: once you allow the glue to tac-up, the pieces will lock together quickly, eliminating any ability to make an adjustment.

Prior to jumping in to the build process, I recommend a few additional steps. Laying out each piece on a flat surface will reveal any warp that may have occurred during shipping, which then can be remedied by placing books or a stack of magazines on top of any warped pieces for a few hours until they return to shape. While the control surface hinges are deeply beveled – allowing for significant surface deflections – they are foam and, therefore, need pre-bending. Using books (or larger batteries) for weights, control surfaces should be fully deflected and weighed down for several hours (or, if possible, overnight). This will result in flexible hinges that won't strain your servos and overwork your BEC.

A critical, but fairly straightforward process should be followed when removing excess glue. When installing a carbon fiber



rod into one of the many pre-cut reinforcement slots, apply a medium bead down the full length, insert the rod so it sits flush (or slightly below the surface) and then wipe off the extra glue with ONE smooth, straight and continuous motion using a small piece of paper towel. Doing so will spread the remaining glue along the length of the area like a thin membrane, adding strength and protection. This approach will also protect the graphics from being removed (By the time you come around for the next wipe, the glue can dry just enough to bring some graphics along with it)!

Oftentimes with 3D planes, full performance requires purchasing extra-long servo arm extensions. Fortunately, these extensions come stock with the Veloxity kit. Made from lightweight and strong fiberglass, they slide – from the bottom – over the stock servo arms base, before being glued and screwed in place. Some minor filing may be necessary to allow the stock servo arms to fit through the extensions' center holes. One of the added benefits of using the TH power package is that the strong and quick ICE digital, metal-geared servos come standard with long leads. This negates the use of extensions, simplifying assembly and saving weight. In terms of a power package, while it's possible to set up the plane using a wide range of components, you'd be hard-pressed to find a better match than the recommended power-train. Normally used to provide more than enough power to the TH 48-inch series, when installed in the 43-inch Veloxity, the 100-gram 1050Kv Twisted Motor Works out-runner delivers a near-irresponsible levels of performance. When paired with a TH 45A ESC, utilizing an internal SBEC providing ample current (at 6V) to the proven ICE servos, you can take confidence in knowing your power system is up to whatever you can throw at it.

Having built several different sizes of TH planes, I found the Veloxity as easy to build as its smaller 32-inch cousins. With a high-degree of pre-fabrication, very little cutting is required and each build step felt like watching a line of dominoes fall. After completing the assembly process, I pulled out my trusty wattmeter for some bench testing. Using the stock Gemfan 12x6 thin electric propeller (almost indistinguishable from an APC), I grabbed the Veloxity at the canopy and brought the throttle up to full. Good grief! Even with a used and abused 30C 3S 2200, I could barely hold on to the plane. Looking down, I read off the numbers – close to 420 watts. By that point my arm was getting sore and I stopped the test. Though a somewhat antiquated approach (and not an exact science), it's been long accepted by the 3D community that a minimum of 150 watts/lb is necessary for 3D flight. 200 watts/lb is often seen as a magical threshold for extreme flight and unlimited vertical performance. With near 420 watts on tap and an all-up-weight of just 29.5 ounces, the Veloxity laughed heartily at 200 watts/lb and proudly proclaimed, "I'm pushing 230!" Now that's just wrong.

THE LAST WORD

Combining the ease of build, durability and repairability of a small foamie, with the flight-characteristics of a larger wood aerobat, the 43-inch Veloxity represents a breakthrough for EPP, profile 3D planes. With an extremely wide flight-envelope, a large-scale feel from a comparably small and easy to transport size, the Veloxity is precise when you want it to be, powerful when you need it to be and stable when it has to be. The Veloxity is hands down the finest plane to come from the team of 3D wizards at Twisted Hobbys. Period. Full stop.

SPECS

WINGSPAN: 43 in. (1092 mm)

WING AREA: Approx. 400 sq. in. (25.8 sq. dm.)

WEIGHT: 27-30 oz. (770-855g)

WING LOADING: 9.8-10.8 oz./sq. ft.

CUBE LOADING: 5.8-6.8

LENGTH: 44 in. (1120 mm)

SERVOS: (4) ICE TWS1514D 14g Digital Metal-Gear

BATTERY: Admiral 3S 2200 mAh 35C Lipo

MOTOR: TMW Series 2814-1050KV 100g brushless outrunner

SPEED CONTROL: Twisted Hobbys 45A ESC

PROPELLER: Gemfan 12x6 Thin Electric

RPM: 11,655

We Used

RADIO Spektrum DX6 six-channel, SPMR6700

RECEIVER OrangeRx R615X, 9171000300-0

BATTERY Admiral 3S 2200mAh 35C LiPo, EPR22003EC3

CONTACTS

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SPEKTRUM spektrumrc.com, (217) 352-1913

ORANGERX hobbyking.com

MOTION RC motionrc.com, (224) 633-9090

For more information, please see our source guide on page 73.