
Giro

AN OFF-ROAD MASERATI

MANTIS VALKYRIE X-FRAME

• The Mantis X-Frame may be the oddest-looking off-road bicycle ever made, but its popularity comes from more than its unique mixture of tubing and design. Unlike a standard mountain bike frame that depends on tube strength, tube size and heavy-duty construction to ensure a strong bike, the Mantis X-Frame is an engineering tour de force. By triangulating the frame with ultra-light-weight tubes, the Mantis is able to create a stronger chassis than is normally possible with steel tubing. Mantis achieves incredible strength, while still being light.

True Temper double-butted chromoly tubes are used for the main triangle, but instead of the industry standard 1.250-inch down tube (with 1mm wall thickness), the X-Frame uses a 1.125-inch down tube, one-inch top tube and minuscule half-inch X-tubes. Wall thicknesses are a very thin .8mm. A mountain bike frame brazed out of this road race tubing would fold like a pretzel over the first big G-out, but the X-frame depends on engineering to put the tubes along the lines of the greatest load. The result is a lightweight steel frame that is stronger than steel!

Visually the elevated chainstays and X-tubes give the Mantis Valkyrie a busy look, but each of the tubes creates additional triangles that serve important functions. The small half-inch X-tubes reinforce the seat collar at the back of the bike and provide additional gussetting at the bottom of the head tube. The radically sloping top tube allows Mantis to run the cables down the top of them, but completely out of the rider's way (because the X-tubes cross over them). Additionally, the X-tubes lower the Mantis' standover height almost two inches over a conventional sloping top tube frame. That is one reason why the X-frame is a popular small rider and womens bike on the NORBA circuit.

The main reason that the Mantis X-frame is so popular with off-road riders is its handling. Mantis' numbers don't mimic the contemporary trends. There are no ultra-steep 72-degree head angles or 74-degree seat angles on the X-frame. Mantis' handling, however, isn't slow by any means. Front-end accuracy is enhanced by a light feel and perfect tracking out of the 70.5-degree head. Our 18-inch test bike was equipped with 1.5-inch offset Bontrager forks (soft blades) and the composite forks gave the X-frame a super-absorbent feel in the rough. The *MBA* crew really liked the relaxed 72-degree seat angle.

Mantis X-Frame: Elevated chainstay bikes have tire clearance that is double or triple what a conventional bike is capable of. That means that a bike like the Mantis X-Frame is more swamp monster than road bike.

It positioned the test riders perfectly for climbing or descending.

With the elevation of the chainstays on the X-frame the mix of tubes and brazing becomes confusing at times, but the front of the X-frame is super-rigid with nary a hint of bottom bracket flex, while the brazed rear triangle gobbles up straight-line hits like the bike has a rear shock. Mantis has fine-tuned the rear subsection by using 16mm stays (top and bottom). These small stays result in a lively, almost alive feel when the bike hits washboard sections or rocky roads. The combination of a stiff front triangle with canted rear subsection gives the bike two personalities—stiffness for hammering and resilience for getting hammered. •

SPECIFICATIONS

Model: Mantis Valkyrie X-Frame.
Manufacturer: Mantis Bicycles, 350 E. Orangethorpe #27, Placentia, CA 92670; (714) 993-4621.
Suggested retail price: $875 (frame and fork).

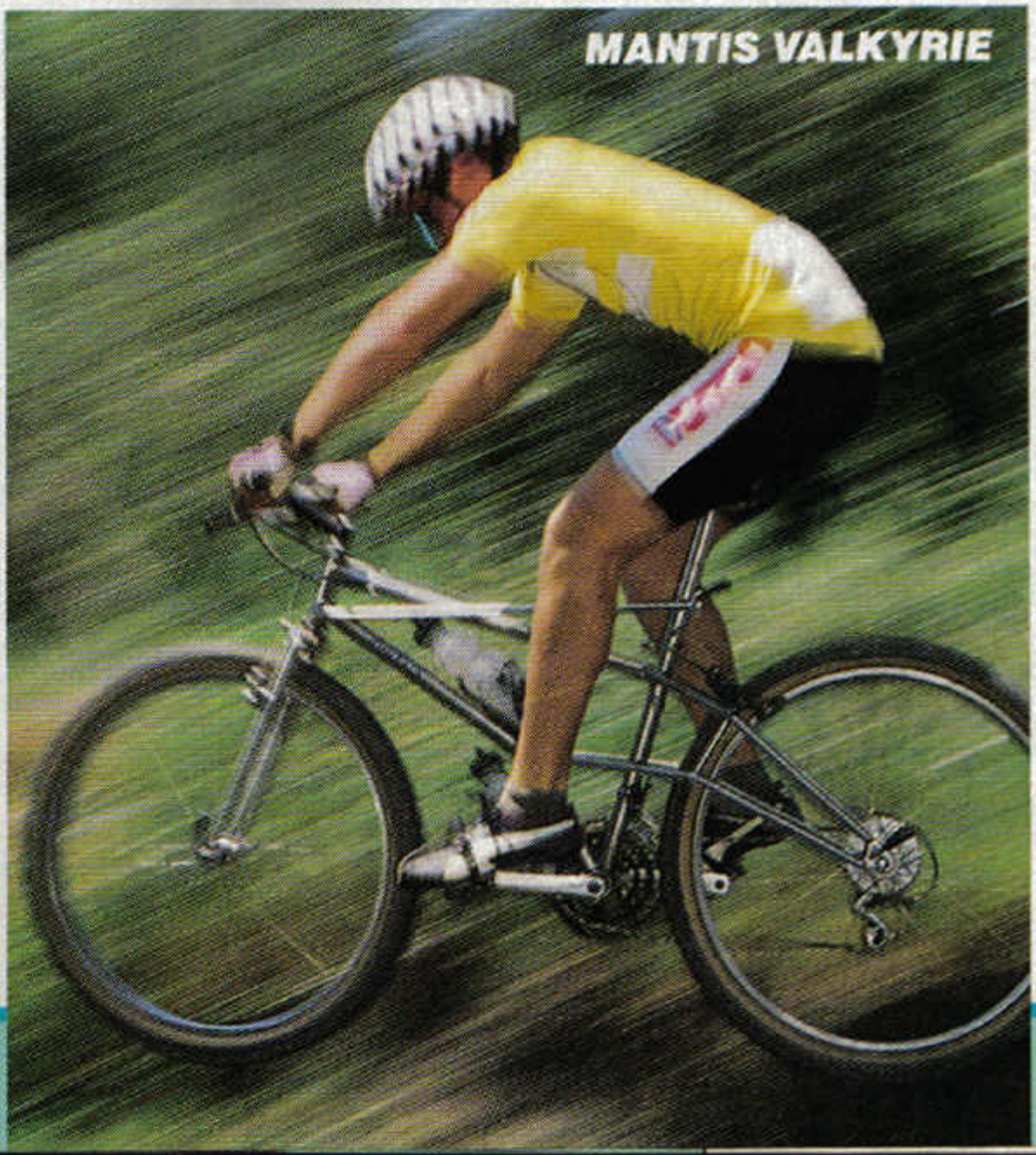
Frame: True Temper double-butted chromoly tubing in the main triangle with aircraft-certified X-tubes and stays. Brazed in the USA. Forks are one-inch tapered straight-blade Prestige (our test bike was equipped with Bontrager forks).

Weight: 27.5 lbs. (18-inch frame).
Head angle: 70.5°.
Seat angle: 72°.
Top tube: 22.5".
Chainstays: 16.5".
Wheelbase: 41".

Interesting angles: The front brake cable is internally routed through the side of the stem, and X-frames doubly strengthen the head tubes reinforcing rings. Strength where needed. ▼

▲ From the top: The X-tubes reinforce the head tube and seat tube, and provide a nifty place to run the top-driven cables. Standover height is low enough that smaller people fit on the X-frame.

Stronger than dirt: Eight tubes connect or intersect at the seat tube. The result is a frame that is super-strong without being cumbersome. Overall frame rigidity is, as expected, very good. ►


MANTIS VALKYRIE


MANTIS XCR-EC
MANTIS

STATE OF THE ART

MANTIS XCR-EC

SPECIFICATIONS

Model: Mantis XCR-EC.
Manufacturer: Mantis Bicycles, 350 E. Orangethorpe #27, Placentia, CA 92760; (714) 993-4621.
Suggested retail price: $950 (frame and fork).
Frame: Straight-gauge Series 6000 welded aluminum front triangle, with a bolt-on chromoly elevated rear triangle. Prestige chromoly one-inch straight-blade tapered forks. Made in the USA.
Weight: 26.75 lbs. (18-inch frame).
Head angle: 70.5°.
Seat angle: 72°.
Top tube: 22.5".
Chainstays: 16.5".
Wheelbase: 41".

• An amalgamation of oversized aluminum main triangle, pencil-thin chromoly stays, artistically bent tubes and the most respected geometry on the planet makes the Mantis XCR-EC the crown jewel of off-road bicycles. Richard Cunningham has achieved fame as a design consultant to Red Line, Fisher, Nishiki, SunTour and other companies, but what he really does is hand-build custom frames. Superb frames, innovative frames, awesome frames and, unfortunately for the off-road aficionado, his Mantis Bicycle Co. only builds a small quantity of frames in a season—each one a work of art, each one a rare breed!

The XCR-EC is the full expression of the elevated chainstay off-road bicycle (EC stands for Elevated Chainstay). The front triangle is Heli-arced out of thin-walled oversized aluminum tubing. The top and curved down tube are 1.5-inch, .065" wall, series 6000 aluminum, while the seat tube is 1.25 inches (.083" wall) at the bottom bracket, but has been magically manipulated at the top to accept the seatpost. Very clean!

The uniqueness of the Mantis XCR-EC is in the bolt-on chromoly rear triangle. By using an aluminum front triangle the Mantis has a very rigid bottom bracket, but extending the aluminum tubing to the rear of the bike would result in diminished tire clearance and increased tubing size. The 16mm seat and chainstays are TIG'd together in a unique cantilever frame design that includes torsion-reducing struts (that extend into the rear brake bosses).

Mantis' aluminum/steel bolt-together composite bikes have proven to be totally reliable in the Mantis XCR and Fisher CR-7. Aircraft-quality bolts attach the chainstays to the down tube (and from behind the seat tube). The seat stays bolt on at the top tube/seat tube juncture.

The amount of work that goes into building a Mantis XCR-EC is evident in the workmanship (not to mention the $950 frame and fork price).

In test rides the Mantis XCR-EC is unbelievable. The oversized aluminum front triangle gives the rider a strong base to hammer from, while the canted-style rear subsection gives a supple and absorbent ride. It's got two personalities. When climbing it's stiff and springy, and when clattering through the rough it feels like it has suspension. The 70.5-degree head angle has such a light and agile feel to it that most test riders thought it had a steeper angle. It goes where you point it—instantly. Mantis geometry is often considered the best that ever was and the XCR does nothing to damage this rep. The seat angle is 72 degrees, top tube length (on our 18-inch frame) is a long 22.5 inches, chainstay length is a very short 16.5 inches and the cartridge bottom bracket bearings stand at 11.5 inches off the surface.

Completely built up with Shimano Deore XT components, Bontrager rims, Ground Controls, Answer bars, Fisher Pyramid grips, Turbo saddle, Grafton brakes and a Curtlo stem, the race-ready weight of Mantis XCR is 26.75 pounds. •

Mantis XCR-EC: With an aluminum front triangle and elevated chromoly rear subsection, the XCR blends superb bottom-bracket stiffness with a phenomenally absorbent ride. Smooth as silk.

Head stays: The large fish-scale beads bond the 1.5" Series 6000 aluminum tubes to the head tube. Reinforcing gussets increase the alloy frame's life span and provide extra support for the cable guides.

Strutting his stuff: Chromoly struts bridge the gap between the seat and chainstays to increase rigidity, but serve a double purpose by extending up inside the brake bosses to lessen bowing and flex under pucker power.

Spy glass: It's easy to see where the chromoly subframe attaches to the aluminum front triangle, but harder to spot how Mantis got the 1.250 seat tube to change dimensions at the top to accept the seatpost. Very interesting!