

# CANNONDALE'S CRUSADE

*Wringing out the Delta V700 & the Super V suspension bikes*

Who would ever have thought that a company famous for making road bikes and bicycle trailers would be leading the assault in mountain bike suspension designs? Over the years it seemed that Cannondale was content to simply do battle in the oversized, thin-wall, aluminum-tubing wars. Not anymore! They have embraced the challenge of designing the ultimate suspension mountain bikes as if they were heeding the call of destiny. While they are still cranking out the road bikes, and have introduced an all-new trailer for '93, it is safe to say that the Connecticut company is consumed with off-road suspension bikes. What began with the original Delta V rear suspension bike in '90—Cannondale's sole suspension bike for the year—has culminated this year with five suspension bikes, and where a Girvin Flexstem was originally spec'd as the front suspension unit, there now sits an advanced and highly praised system of Cannondale's own making. Not bad in the course of three years!

Though Cannondale had been making steady strides in improving the original concept of the Delta V suspension bike, they caught the industry by surprise when they unveiled the radical Super V model last summer (*MBA*, Oct. '92). When it came time to sign up for test bikes at last year's bike shows, we of course chose the Super V to see just how far they had come since we tested the prototype. Just for the sake of comparison, we also chose to evaluate the front-suspension-only Delta V700.

## MAKING HALF THE COMMITMENT CANNONDALE DELTA V700

Since we tested our first Cannondale with the Delta V front fork, we have been pretty big fans of the suspension system. Sure, due to its inherent design, it shot the front end of the bike skyward, and not everyone was enamored with the oversized aluminum Peppercorn fork blades, but no one could complain about the fork's performance; it worked great. With the fork having gotten such rave reviews, we decided to test the Delta V700 to see how a Cannondale works when it relies solely on the front end for its suspension. The Delta V700 is available in 15-, 17-, 19- and 21-inch sizes. Retail price for the 27-pound mountain bike is \$1242. The Delta V700 is also available as a frameset.

Our 19-inch test bike, which was more like a 20-inch, had a 69.5-degree head angle (Cannondale claims a 70-degree) and a 73.5-degree seat angle. The top tube measured in at 23 inches, chainstays at 16.9 inches, bottom bracket at 12 inches and wheelbase at 42.75 inches.

Our Delta V was outfitted with a Shimano LX gruppo, but with top-mount Deore thumbshifters. As valiant an effort as it was to resist Shimano's calculated technology to control the component world, Cannondale might as well have raised the white flag and surrendered to trigger shifters. They say their dealers prefer the top mounts, but at this point it just seems like





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What do you get? For the going price of about \$1250, Cannondale is offering you a made-in-America, oversized, aluminum-tubed mountain bike with one of the best working suspension forks on the market. Okay, so maybe it doesn't look like all the other mountain bikes, but isn't that what makes buying a mountain bike so much fun? ▶

a lost cause, especially when rider after rider had a preference for the Rapidfire Plus design. The tire selection of a Panacer Smoke in the rear and a Dart up front got high marks for their quality traction. We liked the 32-spoke rear/28-spoke front wheel assemblies.

### IT'S THE FORK, STUPID

What separates the Cannondale fork from all the others is that it relies on a pair of rigid blades and a head tube-encased suspension unit which effectively does away with all the torsional twisting problems associated with more conventional dual-telescoping designs. The two inches of travel are accommodated by four strips of needle bearings which encase a cartridge that glides between the steerer and head tube. The cartridge houses the fork's damper unit. By far one of the best parts about the system is the easy-to-use Damping Dial, located on top of the stem. With just a few twists, the fork's adjustment range goes from soft and mushy to almost totally locked out. The Delta V fork offers by far the most efficient damping adjustment of any fork on the market.

Unfortunately, the forks on our test bike were marred by an air leak. This is the same problem that occurred when we tested last year's fork, only this time the loss of air was nowhere near as quick. It wasn't until after a couple of hard rides that we noticed the forks had lost some pressure. The easiest way to tell that air had leaked was to set the fork at the stiffest setting. What originally was almost totally locked out was now slightly cushy. The guys at Cannondale insisted that the leakage problem was fixed, they thought some of the old fork parts might have been used in our assembly. Regardless, they told us that, as a result of last year's problem, Cannondale offers a one-day fork return service for any unit found to be defective. The leakage on the Delta V700 was so slow that we pumped up the



forks when we pumped up our tires. Unfortunately, a small leakage on a new fork can only get worse as the seals wear. The only other problem we had with the fork was the dial itself. We would have liked to have seen some sort of calibration setup, in response to our complaint about the lack of one last year. Most riders thought there was just too much dialing required to go from one end of the damping spectrum to the other. Cannondale said that for next year they plan to have a four-position setting on the dial. That's a good idea—will it retrofit?

### IN THE END

Overall, we liked the ride of the low-line Delta V700 Cannondale (a more expensive version, the Delta V1500, is available with upgraded components). It's due to the fork that the Delta V700 is such a gas to ride. Test riders, long acquainted with the performance of dual slider forks, were amazed at the increase in steering predictability with the Cannondale unit. Few were accustomed to such precise steering, or the corner-carving agility afforded by isolated suspension atop the rigid blades. Although nice and stiff, the oversized aluminum wasn't anywhere as harsh as expected. When it came time to query the test riders, the Cannondale received the highest honor hardcore riders could give: "Sure," they said, "I consider it a good race bike." ●

### ODE TO THE MODERNISTS CANNONDALE SUPER V3000

● Cannondale's Super V is an incredible piece of machinery—by appearance alone! How different is it? Take a quick look at the bike, close your eyes, and try to explain what it looks like to someone not familiar with suspension bikes. Sure, it's still a bicycle, but it looks like nothing our

monds have been trained to accept a bicycle to look like. Cannondale is playing by a new set of rules with the Super V, and though the rest of the mountain bike industry might not choose to play along, they can't ignore the move either.

Yet as wild as the bike is to look at from afar, it's not until you get up close that the bike really becomes entertaining. Cannondale has taken tube shaping to a new level with the Super V. This bike makes a Bernini sculpture look flat and uninspiring!

### WHAT'S SO SUPER?

Cannondale will be making the Super V available in 17-, 19- and 21-inch sizes. The going price for the top-of-the-line 3000 is \$3195 (a frameset is available for \$1950). The frame is made entirely from 6061 T-6 aluminum. Unlike all the other Cannondales, the Super V has exposed welds joining all the tubes. Because the weld beads have to be exposed on the swingarm due to the thin-gauge material, Cannondale decided to keep the look throughout. For anyone who is familiar with Cannondale engineer Chris D'Aluisio's background, the swingarm makes perfect sense. Chris is one of America's top 250cc road racers and the "Delta Box" swingarms mounted on his TZ225 Yamaha are almost identical in form to the Super V's. The asymmetrical, boxed aluminum swingarm is made from four separate sheets of material and requires four different fixtures to create its complicated, and shapely, form.

To provide increased durability, the swingarm has a second skin running down the right side to prevent chain-slap damage. There is a one-inch alloy tube running through the interior of the swingarm underneath the shock mount to add increased support and durability to the structure. As much as full-suspension bikes are aimed at the downhill set, the Super V faces its first limitation in gearing as a result of the

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Visually entertaining: Few bikes are as strange-looking as the Cannondale Super V, but the Connecticut-based company steadfastly believes the shape was necessary to guarantee the performance. The radical full-suspension Cannondale isn't a bike for everyone, but for the right person it has the potential to be the ultimate. ►



swingarm's shape. In other words, don't try using anything bigger than a 52-tooth chainring—it won't fit!

## WHAT GOES DOWN MUST COME UP

Front-suspension duties on the Super V are no different from the Delta V700. In fact, everything from the sealed headset to the choice of five differently angled stems is interchangeable. It's when you leave the headset and start working your way back that things really take on a different look. The massive down tube is swaged into three distinct shapes. There are water-bottle mounts on the top and bottom sides. The lower portion of the seat tube rises just far enough from the bottom bracket to make room for the front derailer. Like the down tube, the top tube (or diagonal tube) goes through a thorough shaping process of its own. Despite our initial nagging about the design, Cannondale says the cut-off seat tube has never failed. Depending on what size rider you are, your Cannondale dealer is supposed to cut the seatpost off flush with the diagonal cut of the tube, to guarantee that the seatpost won't be run so low as to hit the shock.

What about the shock? This is the latest entry from Fox Racing. Dubbed the Alps 4, the new shock features a larger shaft than previous models and requires less air pressure. The high air pressure needed for shocks that have as much leverage ratio as the Cannondale has always been a problem with the wrecking crew. Fox has gotten the needed level of air pressure for the Super V down to the 200-psi range. Cannondale recommended using a Sika floor pump (which has enough capacity). We used a Fox-supplied air gauge and pocket-sized nitrogen cartridge to do the job (contact Fox at [408] 269-9200), eventually setting for about a 185 psi setting. Even though the majority of people will

set the air pressure once and leave it alone, any shock requiring this amount of air will make trailside adjustments difficult. By all means, make sure the valve stem cap is always in place, because once the air goes, it's gone!

## WILL IT MAKE YOU SUPERMAN?

Coast the Super V over a row of high-speed stutter bumps and you probably won't feel a thing. Pedal at a slower speed over the same set of stutters and you will know you are hitting something. By design, the Super-V's rear suspension would fall into the non-active category. Like the GTRTS-1 (MBA, Jan '93), the Super V only works under certain prescribed conditions. The folks at Cannondale say that getting the proper shock setup is crucial to the bike's performance. They advise that the shock be inflated so that there isn't any sag from the rider sitting in the saddle. Any amount of sag (from underinflating the shock) will guarantee "bio-pacing," a no-no according to Cannondale. As you ride along, it's quickly apparent that the rear end does not readily compress over bumps at slow speeds. Due to the swingarm's high pivot point and the required shock setting, it takes a reasonably big bump (taken at speed) to get the shock moving. While this was great for a particular style of riding, test riders who spent time pedaling along at a more meandering pace were wishing for something more compliant (active) to take the edge off the slow-speed bumps.

Riders were split as to how much interference the swingarm caused with heel clearance. For some, their heel hit on every pedal revolution; for others, never at all. The slack 69-degree head and 73.5-degree seat angles (Cannondale claims 70x74) worked surprisingly well for everyone. When the Cannondale was up to full speed, there was an amazing degree of predictability to the chassis. "Awesome"

was how test riders viewed its high-speed cornering traits, while at lower speeds it was rated "good."

As far as the bar ends were concerned, these were shorter versions of what Cannondale has offered in the past. Cannondale says the design is intended to give the rider one real aero position for those parts of the ride that include road sections. "Road sections?" one rider cried. "I think they're great for barging through groups of roadies partaking in mountain bike events!" As aero as you might be able to get with the extended bar ends, we never dared get that far out there to give them a try.

## THE BIG SELL

Cannondale has taken a lot of flack for the direction they have chosen to follow with suspension mountain bikes. They also deserve a lot of praise. The 25.5-pound Super V is something that takes the mountain bike out of the realm of traditional bicycle thought. It's a bike that attracts non-cyclists like few others. In the end, the MBA test riders were split on whether they preferred the Super V or the Delta V700. Apparently, as progressive as we like to consider ourselves, the Super V still represents a stretch that many of us are unable to make. We doubt Cannondale ever expected the Super V to be the bike for the masses. This bike is designed for a niche market to be sure.

As much as mountain bikes are recognized as an American institution, being both conceived and manufactured in America, the Super V represents American ingenuity at its free-thinking best. We can't see this type of design and technology coming out of Europe or the Orient. Like baseball, apple pie and fast-food restaurants, the Super V falls into the category of all things uniquely American. Strange to look at, and wild to ride, it's quite a bike. □

