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MOUNTAIN  
BIKE  
ACTION

# MOUNTAIN BIKE

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**INSIDE  
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ULTIMATE OFF-ROAD TOURER!**

**ROADIES ATTACK  
MOUNTAIN BIKE NATIONALS:  
TOMAC DEFENDS OFF-ROAD HONOR!**

## **5 BIKE TESTS:**

- DIAMOND BACK'S SMOKIN' APEX
- CANNONDALE'S TRAIL BRED SPECIAL
- KLEIN'S FLASHY ALUMINUM PINNACLE
- BRIDGESTONE'S INNOVATIVE MB2 & MB3











*Hop along: The SM700's sloping tube top gives the rider ample room to move around on the bike, which helps climbing. Unfortunately, the small 1.175 tires are insufficient for any serious ascents.*

# CANNONDALE SM700

*Determined to fight back*

America's popular culture has always had an affection for the underdog—the little guy who keeps getting stepped on, but keeps coming back. If ever there was a character in the bicycle industry similar to the skinny kid on the beach—so irate from getting sand kicked in his face that he goes on a crash course to build himself up and fight back—it would be Cannondale. Cannondale is an American bicycle builder that has suffered through both legal and design problems while striving to make a quality, oversized aluminum-framed bicycle.

Cannondales have been very popular among amateur road racers who yearn for exactly what Cannondale has to offer: a rigid and lightweight bicycle that can win races. For 1988, three major road-race teams chose the Cannondale as their team bike. The riders were happy. Cannondale was happy. But the officials of the European-based Cycling Federation weren't. They thought the Cannondale, and more spe-

cifically, the multitude of odd-shaped, graphite frames, were moving too far away from what the bicycle was originally intended to look like. (Wasn't that the one with the front wheel the size of a flying saucer and a rear wheel the size of a frying pan?) The organization's irrational course of action was to ban all bikes that used oversized frame tubes so that the public would be protected against non-traditional products. This was yet another bad blow to Cannondale (and the team riders who spent the winter training on the bikes), so Cannondale was forced to make special small tube frames for the team riders (frames that will not be available to the public), which is exactly what the new rule was created to avoid. The European officials are undoubtedly elated that their revisionist mentality had such successful results!

Despite all the trouble, Cannondale has quietly gone on making bicycles, adamant that through continual updates and race-

inspired development the Cannondale would be a winning force in cycling.

**MODEL:** Cannondale SM700

**PRICE:** \$795

**PURPOSE:** Mountain bike for all levels.

## **FRAMESET: JUST HOW BIG ARE WE TALKING?**

There are some bicycle manufacturers who claim to use oversized tubes for making their frames. Few, if any, are as oversized as the Cannondale. Just look at the numbers: downtube, 1.75 inches; top tube, 1.50 inches; seat tube, 1.25 inches; chain stays, 1 inch; and seat stays, .75 inches (outside diameters). Oversized? We're talking massive! Why so big? Frame building theory says that to attain adequate rigidity the frame tubes can either be thick-walled small-diameter tubes or thin-walled oversized tubes, which is what the Cannondale uses. What you get is an incredibly absorbent frame that is still very rigid and light for its size.

Pennsylvania is the state where over

# CANNONDALE SM700



**Model:** Cannondale SM700  
**Manufacturer:** Cannondale Corporation, RD #7 Friendship Rd., Bedford, PA 15522  
 1-800-BIKE USA  
**Sizes available:** 18", 19", 20", 22"

**Finishes available:** Black, red  
**Suggested retail price:** \$800

#### COMPONENTS

**Front derailleur:** Shimano Deore  
**Rear derailleur:** Shimano Deore

**Front brake:** Dia-Compe AD 980 cantilever  
**Rear brake:** Dia-Compe AD 990 centerpull  
**Crank:** Shimano Deore Biopace 48/38/28  
**Freewheel:** Shimano six-speed, 13, 16, 18, 21, 24, 30

#### FRAME

**Tubing:** 6061 T6 aluminum  
**Head angle:** 71°  
**Seat angle:** 72°  
**Top tube length:** 23.25 inches  
**Chain stay length:** 17 in.  
**Braze-ons:** Two water bottles, seat stay bridge for rack

NOTE: The MOUNTAIN BIKE ACTION test crew rides its test bikes under controlled circumstances, on private property and with respect for the environment. No wilderness or environmentally sensitive areas are used.

tubes is attributable to a fair amount of crimping to the chain stays. Did we say fair amount? The chain stays are *radically* crimped to provide crank, wheel and chain ring clearance, and though it may look odd it isn't the least bit detrimental to performance. Also of note are Cannondale's patented ovalized seat stays which help provide some of the legendary frame rigidity. Double-rack eyelets are found front and rear to accommodate the touring tradition that Cannondale has become famous for. The forks are a standard pair of 1.125 round chromoly legs and are kept in place by a Tange Falcon headset that's been painted black. For some reason the SM700 only has two water bottle mounts. What's strange is their placement—one on top of the downtube and one underneath it. Why not two in the more familiar and easy-to-reach positions (downtube and seat tube), or three mounts, which our 20-inch frame had more than enough room for? A pump peg is also found in the middle of the head tube.

#### GEOMETRY MEANS WHAT?

Why did our 20-inch test frame seem bigger than other frames of the same size? Cannondale has popularized the 13-inch bottom bracket height, which is a full inch-and-one-half higher than the majority of

10,000 of the big-tubed frames are produced each year. For 1988, Cannondale has refined their lineup to keep up with the fast-paced marketplace. The SM700's 6061 T6 heat-

treated aluminum tubes are TIG-welded with incredible care and precision. The filing is first rate, some of the best we've ever seen. Part of Cannondale's success with the fat



# CANNONDALE SM700

bikes on the market. Cannondales have always been popular in their native Northeast setting, and the high bottom bracket caters to the type of riding that is found there. The *MBA* crew isn't really in love with the measurement, because of the effect on high-speed handling when descending (which is a characteristic more common to the country's western regions), but we do like Cannondale's commitment to their design principles. If you live in an area with rocky trails, the 13 inches would definitely work to your advantage.

Our test bike was spec'd with a 72.5 degree seat tube angle and 71 degree head tube angle. What does that mean to you? The Cannondale will be a consistent handler and the slightly laidback seat angle will work well with the 17-inch chain stays for finding traction. The SM700 had a well-spaced-out 23.25-inch top tube which is more than enough room to get stretched out on—bravo Cannondale! The wheelbase is a ballpark 42.5 inches.

If you have been following the evolution of the Cannondale mountain bike, you know that they experimented with 24-inch rear wheels for a while. Our test bike used 26-inch hoops front and rear, but bikes with the smaller rear wheel are still available with SunTour XCD components. The choice is yours, but if you happen to be a small rider, the 24-inch wheel will accommodate you better, along with the bike's sloping top tube.

## AND THE WHEELS GO 'ROUND

Black, sealed-mechanism, Sansin hubs with front and rear quick-release are laced to hard-anodized Araya RM-20 rims. For the asking price, we'd prefer to see Shimano Deore hubs, which have proven better at keeping out the elements. The RM-20 rims are some of the most popular in the sport, light and strong; they'll take the abuse and keep rolling.

We were let down by Cannondale's choice for tires on the SM700, for two reasons. First, the IRC Racer X-1 tires are woefully too small at 26 x 1.75. They might have less rolling resistance than bigger tires, but that's not the gauge with which you measure good mountain bike tires—in fact, it's really just the opposite! No, you don't want tires that weigh 50 pounds, but we'd even prefer some Fisher Fatracer 2.02, the biggest tires available, because they'd be better for off-road use than the small IRCs. The second reason is that, with such surprisingly good tire clearance, there's no reason to have the thin sneakers. With big tires, which the SM700 could've accommodated, we'd be able to expound on two good points: big tires and big clearance. Instead, you only get the good tire clearance. Oh, well.

## DRIVE TRAIN: AND THE TRAIN KEPT ROLLING

Shimano 175mm Deore cranks with 48/38/28 Biopace chain rings will keep you



*Where are they? The filing on the SM700's welds was impressive—you could barely see where the tubes were joined. The pump peg is located in the middle of the head tube. Sakae's short alloy stem was tolerable due to the long top tube, but a longer and shorter stem would be still better.*



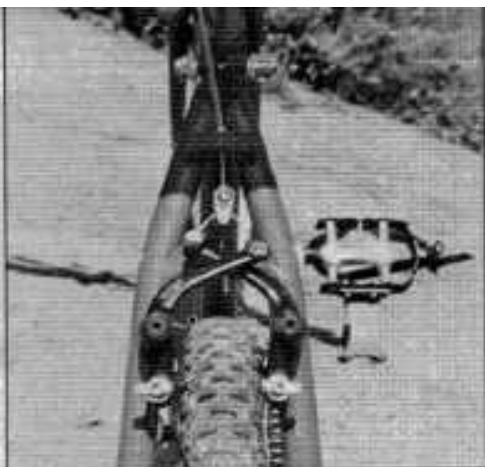
*A solution to every problem: Any bike that uses oversized frame tubes will face the problem of crank and wheel clearance. The SM700's chain stays are heavily crimped to let things pass unhindered. Rear wheel clearance would easily accept a bigger tire.*

in the spinning mood for many miles. Held in with a Sugino bottom bracket, the arms are mated to Shimano Deore XT pedals along with Christophe toe clips and straps—nice touch. The XT pedals are a good choice for recreational riders due to the large platform they provide.

The *MBA* wrecking crew has been waiting to test a bike that doesn't have Shimano derailleurs and shifters because we were running out of ways to say good things about the units. The SM700 came with a full Shimano Deore shift system. Let's see, how does the line go? Oh yeah, excellent shifting capabilities. The only problem we've ever had with Shimano's mid-line components is when we fail to adjust them properly. The 13/16/18/21/24/30 was efficient, though the jump from 24 to 30 might be on the steep side for beginning cyclists.

## COMPONENTS: AN ECLECTIC MIX

Cannondale's own alloy-tapered bars provide the rider with slightly swept-back positioning. Handlebar bend is one of the most personal choices a rider can make. Straight bars tend to be just as awkward as bars with too extreme of a bend, so we were comfortable with Cannondale's choice



*We got brakes: The SM700 features the Dia-Compe brake system. The Advantage 990 rear brake was an efficient stopper and along with the sculpted 290 brake levers provided us with the best stopping power of any Dia-Compe-equipped bike we've tested. The Strong seatpost has been revised and finally is just that—strong!*



*Pick a gear: Cannondales are known for their touring prowess, and the 13-30 gear selection guarantees that you'll keep the SM700 spinning. Double dropout eyelets provide mounts for both a rack and fender. Cannondale has a patent on their oval seat stay design—they're massive.*

between the two. The bars are painted red to match the frame. A funny thing about the grips, though—they had bar caps with the famous Grab-On logo, but they were like no other pair of Grab-Ons we've ever seen. The grips felt like the cheaper, soft foam copies of the preeminent grip on the market. Grab-On is famous for finding the perfect foam density, and everyone else is famous for trying to copy it, but never being successful. We'd guess that these were copies.

The *MBA* crew is usually critical of bikes, especially those that cost over \$500 and use short, cast-alloy BMX style stems. The SM700 came with a Sakae version, but we can't be as critical about it because unlike other bikes which come up short on top tube length and make it worse by using a short stem, the Cannondale's long top tube worked well with the stem. (Gee, it's not like us to be totally uncritical.) The stem is on the high side with its four inches of rise, but that also tends to be more of a personal opinion, since there are many people who buy mountain bikes just to avoid the crouched-over seating position commonly found on road bikes. We don't favor being crouched over, just comfortably stretched out.

Strong seatposts have always had one curious aspect in performance—going con-

# CANNONDALE SM700



*Let 'er rip: Due to the 13-inch-tall bottom bracket, the Cannondale's handling on fast motocross-type course was a bit awkward. The extra inch and a half over normal bottom bracket heights made the bike waver at high speed. The SM700 was best suited for bounding through the rough stuff.*

trary to their name, they haven't proven to be strong. Cannondale found this out when they spec'd the seatpost on earlier models. So when they went to Strong this time, they came with a list of demands—all of which seem to have been met. The revised seatpost is sturdy and we didn't encounter any of the past problems of it bending. A plain-wrap

Vetta seat is firm, but comfortable.

The Cannondale SM700 was equipped with Dia-Compe AD 990 brakes along with their sculpted high-tech AD 290 lever assemblies. We've gotten a few letters from tried-and-true Dia-Compe users asking us about the continued difficulties we've had with the brakes. On past test bikes that have come equipped with the unusual brake levers, the problem has usually originated from a flawed design on the part of the manufacturer, who utilized standard brake routing for a system that is so different from past designs that it requires special attention. That the Dia-Compe brake system is being spec'd on upper-line Fisher and Raleigh bikes would indicate that it must work. Once tuned correctly by the owner and frame designer, the brakes do work efficiently.

However, we steadfastly believe that the AD 290 brake levers, by design, do not provide the necessary braking leverage, due to their bend, unless special consideration is given to using them at the factory. On the SM700 we found them to be much better stoppers than on past test bikes, because they were set up correctly back in Pennsylvania, and Cannondale's routing complements the Dia-Compe design. Another sore point that we feel is attributable to Dia-Compe is the quick-release of their U-brake. On bikes with under-the-chain-stay-mounted brakes, the quick-release has your fingers heading straight into the chain rings. Luckily, the SM700 has its rear brake placed on the seat stays so there isn't a problem.

# CANNONDALE SM700

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Also, due to their massive size, there is no flex problem on the seat stays when braking hard. Up front, the SM700 uses Dia-Compe cantilevers which gave us no problems at all. Overall braking on the Cannondale was efficient, and one of our expert testers thought they worked great.

The rear brake cable is routed along the top tube, which is required since the brakes are seat-stay-mounted. What isn't required is having three cable guides along the top tube as well. As found on the hard-core race bikes, only two guides are necessary and, if possible, should be mounted off on the side of the tube. We'd drop the middle guide because of its propensity to snag the rider's shorts. The cable was also wrapped with a cable housing for its entire length. Again, this is not the hot setup. The housing may help the cable stay clean, but it also adds flex to the cable which can give the brakes a spongier feel.

## HOP ALONG THE CANNONDALE

The *MBA* test crew liked riding the SM700, especially in conditions where it was designed to excel. Picking through the rough stuff and riding single-track trails over hill and dale are where the Cannondale's unique attributes really shine. The oversized aluminum tubes do more than look different; they give a responsive and forgiving ride that can be appreciated on long journeys. The sloping top tube gives the rider a secure feeling, allowing more than enough room to move around on the bike. We still think the stem could be changed for a lower riding position, and even to get a bit more stretched out.

Our preference for a racier body position comes from our regional experience with mountain bikes. On the West Coast, long downhill fire roads prevail and that's where we feel most at home. Unfortunately, the SM700 didn't. That 13-inch-tall bottom bracket is quite noticeable on quick descents with fast turns; it feels awkward. Making matters even more awkward are the tires (too small). We never felt comfortable on dry hard-pack trails, and front end washout was a problem. A bigger tire would provide a bigger tracking surface and that's what's missing with the 1.175 IRCs.

In the end, we were happy with Cannondale's SM700. A good-handling trail frame with excellent wheel clearance and roomy top tube are enough to make anyone happy. We're forced to nit-pick the water bottle placement, tires and grips. For the asking price, all three can and should be changed in the future. The Cannondale SM700 is the American builders' mid-line offering. As it sits, the SM700 falls short of being a full-on race bike, but it makes an excellent tour and recreational bike. Like the scrawny kid on the beach, Cannondale has revised itself into something better with each new model. Bullies, beware! □