



Cannondale Lefty – the story of half a fork

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By [Andrew Dodd](#) in [Features](#)

Cannondale Lefty – the fork people love to hate

If you're reading this you probably fall in to one of three camps:

1. You hate the single sided fork
2. You love the Lefty
3. You're oddly curious.

Whichever one you are, you'll probably be talking about it later on. Which means Cannondale made a good choice way back in 2000 when they launched it – as people are still chatting about it. Most conversation surrounding the Cannondale Lefty though, tends to be about how weird it looks; how bendy it must be and how it must surely be rubbish – as no one else makes something similar.

But there's no such thing as bad press. The Cannondale Lefty fork is great bit of mountain bike marketing that draws as much attention now as it did in 2000.

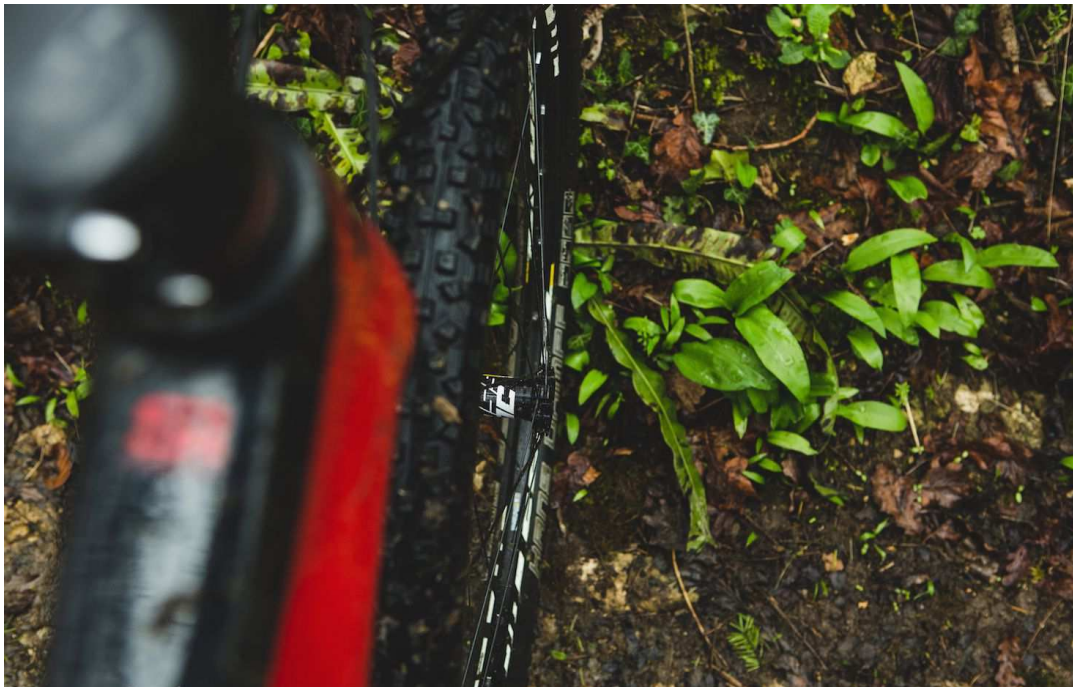
And the truth is, most who try the fork are surprised by it's performance – even those who dig heels in.



Yeah OK, so it's a bike with half a fork. It looks odd – we know. But single sided wheel support isn't new. Look at the landing gear on a 747; look at the rear end of many modern motorbikes. And look at the wheels on your car. Is it really that strange on a bike? **Photo | Callum Jelley**

Whatever you think of the Lefty, you can't help but get drawn in looking at one. The more you look, the less it makes sense.

We know we're not alone in having a soft spot for the Lefty.



Why does it even exist?

We spoke to *Clive Gosling* from Cannondale, to find out a bit more about the crazy fork.

FJ: The Lefty is a radical design – where did the idea come from, and why did Cannondale choose to pursue it?

Clive Gosling: Well, it starts with the original Headshok suspension system from 1992, with 50mm of travel. As suspension travel demands grew, the ability for the unit to be housed in the head tube topped out at 80mm, and therefore we needed to look outside of the head tube. We already had the Moto 120 fork in 1996 – which was on the Super V DH4000 – but that was a regular telescoping fork and suffered all of the bushing/stiction/flex that was typical of any telescoping fork at that time (and many still today).



Cannondale have had a lot of 'firsts' over the years – including the Super V 4000, which was the first production downhill bike on the market. It featured the Moto 120 fork which was very plush. Later the internals were worked in to the Moto FR fork.

HEAD SHOK

1 1/8" steerer can be retrofitted to bikes with standard diameter head tubes.

Six-way tuning: Damping Dial, preload, rebound and compression damping, oil viscosity and head angle can be adjusted.

Oversized fork legs eliminate flex for predictable handling.

Extra-long stanchion tube overlap eliminates stiction for HyperActive response.

HEAD moto 120

On-the-fly adjustability: Five-position Damping Dial is adjustable on the fly.

Five-way tuning: Preload, compression, rebound damping, and oil viscosity are all adjustable.

88 needle bearings eliminate stiction for HyperActive response.

70 mm of travel soaks up bumps, ruts, rocks and roots

HEAD hyperActive 70

On-the-fly adjustability: Five-position Damping Dial.

All HeadShok-equipped bikes feature the beefy CODA sealed-cartridge headset with ABEC-3 aircraft-quality bearings. The headset never needs adjusting, and will never loosen during a ride.

CNC-machined fork crown provides plenty of tire clearance.

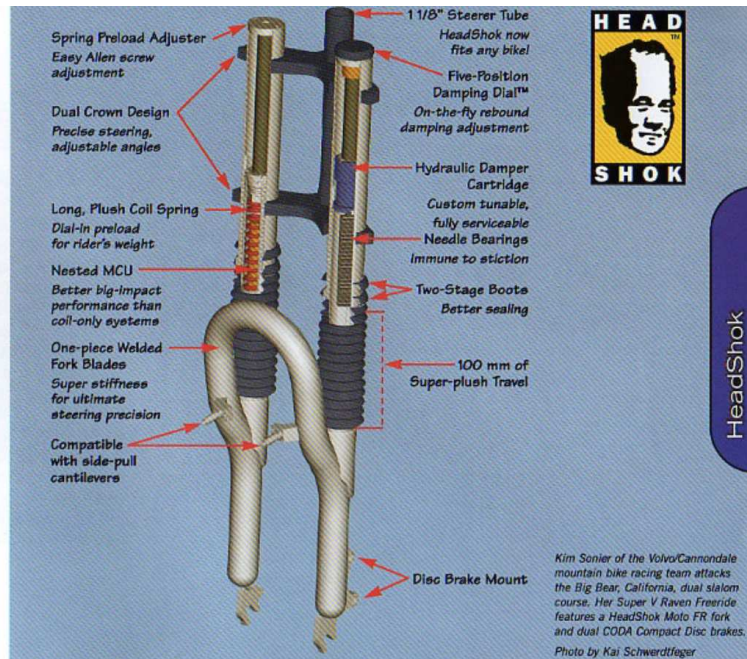
Precision tracking: Patented

"That the HeadShok system works is inarguable. Tinker's two-in-a-row NORBA titles and Alison Sydor's



"The Moto FR (Freeride) fork was introduced in 1998 which was essentially two Headshok's – one each side, offering 100mm travel. It was bombproof but weighed a bloody tonne!

It was so tough that there are still many of them out there today. They are still quite sought after for tandem use as they perform really well under load of two riders. This fork led to 'team only' versions with 150mm featured on the radical Cannondale DHF (Downhill Fulcrum) piloted by the likes of Missy Giove"



"In 1999, word has it that some of the mechanics were messing around with a MotoFR to prove how stiff it was. They chopped the lower in half and botched on a bolt through hub to the sprung leg, then rode it around the parking lot. The idea for Lefty was born and they wasted no time. Brian Lopes won the slalom at Sea Otter that year on a Lefty, so it launched with a bang!

The rest is history!"



(including axle*), making it more than two pounds (908 g) lighter than last year's HeadShok Moto FR and very possibly the lightest long-travel headshok lefty fork anywhere. Like other HeadShok forks, the Lefty has four corresponding flats on both the oversized aluminum stanchion and slider, with 88 needle bearings rolling easily between the flats for unparalleled response to small bumps.

headshok lefty

"Testing at our Q-Lab shows the Lefty has three-times the fatigue life of other top forks."

sealed cartridge bearings and a weight-saving tapered chrome-only axle. The axle has a bulky 25 mm outside diameter on its left (supported) side for strength, and a slimmer 15 mm o.d. on the unsupported right-hand side where the loads are significantly less. For easy wheel removal, the hub is outfitted with a self-extracting bolt that draws the wheel off of the axle as the bolt is loosened.

The new disc brake-specific fork is air-sprung and air-damped. An "on-the-fly" lockout control temporarily deactivates the fork (for low-speeds or road rides to the trail-head), and an on-the-fly rebound adjuster (Lefty DLR model only) lets the rider match the Lefty's performance to the terrain.

Chart A: Torsional Stiffness
Source: Mountain Bike Germany Magazine

Fork	Stiffness (N/mm)
Cannondale Lefty	401
Rock Shox	217
Rock Shox	196
Rock Shox	127
Rock Shox	116

Amount of torsional force (in each pound) required to twist the fork one degree

Chart B: Side Load Stiffness
Source: Mountain Bike Germany Magazine

Fork	Stiffness (N/mm)
Cannondale Lefty	90.0
Rock Shox	79.4
Rock Shox	68.0
Rock Shox	67.4
Rock Shox	58.0

Amount of side-load force (in each pound) required to bend the fork one inch

**Lefty's 27.6 lb. weight includes the axle from its dedicated, weight-saving hub. The full Lefty weighs including the entire lightweight hub, weights and flat inserts (13.8 kg), which considerably exceeds the weights of other headshok forks. We chose to add the weight of a front hub (typical about a half-pound) to get an accurate comparison with the Lefty. — subject pending.*

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www.cannondale.com

"Some people still have trouble getting their heads around the Cannondale Lefty because they can't see that inside it's a square leg in a square hole, rolling on four sheets of needle roller bearings. On the outside it's hard to see what stops the fork from twisting but in all these years, we've never had a fork leg break. I don't think any other brand can claim that!"

At events we do get the usual questions, but we just get people riding them and then it all makes sense"



The Lefty Supermax is the latest incarnation of the Cannondale Lefty fork, and it features 160mm of travel and is on their top flight Jekyll Carbon 1 **Photo | Cannondale/CSG**

FJ: In a market where suspension forks are generally very good and the pricing is coming down – why are Cannondale still producing the Lefty?

CG: Because it's still offers performance advantages. People often comment at demo events that they can feel the fork dive a bit in turns, that's because the fork is still working under side load and not binding on itself, which is typical of telescoping assemblies. It would be a much easier path to whack on a Pike or 34, and at lower price points we do. But at the upper level we still know that a Lefty equipped bike performs better and that is why we continue.

Do you think Cannondale customers buy in to specific technology – like the Lefty – or do you think they buy in to the brand?

The two go hand in hand, a typical Cannondale customer is very similar to a typical Cannondale employee, passionate, they want the highest level of performance and don't mind being a "bit different" to the norm. Like I said before we occupy a unique space in the bike market of being a fairly big brand nowadays, but we still have the kudos and prestige held by smaller speciality brands. If someone is in the market for a Santa Cruz or Yeti, they might also consider a Cannondale. They probably wouldn't buy a brand considered mainstream though, like those that may or may not be with an S or a T...

Why do you think other manufacturers have avoided producing a single leg suspension fork, other than British brand USE?

No one else can make a fork like the Cannondale Lefty. We have literally everything protected under patent. But we do make a 'Lefty For All' kit that allows Lefty to be fitted into practically any bike.

Lefty is a very popular fork for many Guerci 29'er XC builds for example. The USE fork was pretty decent actually – [Scott Beaumont](#) used to race it but because it was a typical telescoping tube inside a tube structure, it suffered the same issue of binding and stiction as regular fork designs.



The USE Sub fork was a pretty wild looking single legged fork. Instead of having the square legged design that Cannondale use, it used a regular telescopic leg, but utilised a linkage that both stopped the fork diving under braking and helped stop flex. Nice try, but no cigar unfortunately. **Photo | Geoff Waugh**

What are the stand out features on the Cannondale Lefty Supermax?

It's Lefty for a new generation of longer travel, more capable trail bikes. The bigger diameter legs and additional travel (up to 160mm on Jekyll) make it a far more capable fork. The damping is far more advanced too, designed to cope with what riders are doing on 160mm travel bikes these days.



Factory Jackson

If anyone is going to do the right job of pushing a Cannondale Lefty, it's Mark Weir. Mark doesn't back off through anything! Photo | Cannondale/CSG

What would you say to people that have reservations about the Lefty – perhaps on appearance/performance and even safety?

Ha, if they have safety concerns they should definitely get a Cannondale Lefty as you won't find a stronger, stiffer fork. If anyone really has that thought, they better not get into a car or on a plane – as that same stub axle design is all they've got holding the wheels on!

They just need to ride it. A good, long ride on varied terrain. After five minutes people just don't even notice there is only one leg. If they like it then great – if not everyone else offers the same front end as each other.

Feel free to follow the herd!

What do you think of the Cannondale Lefty?

Let us know below!

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5 comments

3 Comments

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Joe Arts • Santa Rosa, California
Had a 2 bikes now with lefties, Currently riding a Carbon Trigger 2 with lefty, I absolutely love it! Had my bike up some varied terrain up the Lake District (UK), where I live near, the lefty never fails me and I feel I can do pretty much anything with it! Keep up the awesome work Cannondale!
Like · Reply · 18 February 2016 06:40
- 

Andrew Dodd • Editor at Factory Jackson
I tested a Trigger 2 Carbon about this time last year and really loved it, There really is something cool about the Lefty, Nasty and nice all at once!
Like · Reply · 1 · 18 February 2016 07:43
- 

Joe Arts • Santa Rosa, California
I read that review! Your totally right, you just have to try it! It's not marmite till you have had a bite!
Like · Reply · 18 February 2016 08:04
- 

Peter van Haltsma • Technisch expert gas at Enexis
I ride C-dale now for almost 20 years, They make the best bikes and Lefty is the best fork i have ever ridden.
Like · Reply · 21 February 2016 04:04
- 

Marco Ryccardi
If you owned a Cannondale with Lefty when you decide to replace it there are no other bikes!
Like · Reply · 2 March 2016 14:39

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