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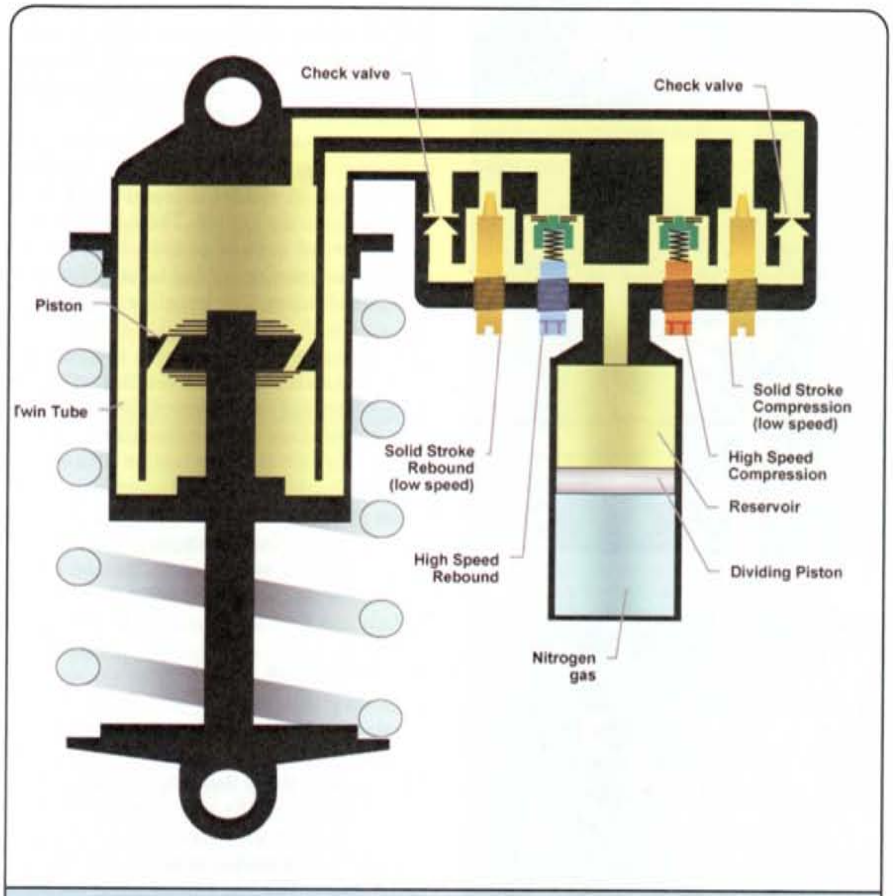
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Cane Creek's Shotgun Shock



By parnering with Öhlins, Cane Creek has nudged its way into the high-end downhill and freeride market. The Double Barrel shock uses the same twin tube technology as in Öhlins' TTX40 motorsports shock, which creates a full circuit for oil flow. Look to pay about $850 for the Ti spring version and $650 for the steel spring.



This type of shock is representative of the early days of mountain bike suspension. In this "emulsion shock," oil flow is controlled by a small shim stack. Notice the port drilled through the main shaft (known as a "thru shaft"), and how the oil is balanced with a charge of nitrogen gas.



This "monotube" type of shock represents current design trends in suspension. The floating piston separates the gas from the oil, and shim stacks and a thru shaft control the oil flow.



Many downhill shocks use a remote reservoir that allows for a higher volume of oil. This is example shows the thru shaft design with shim stacks and a remote reservoir that houses the gas charge and floating piston.



The Double Barrel sits trailside in the Pisgah National Forest.

Technical drawings courtesy of Cane Creek, Photos by Michael Browne

Cane Creek knew that if they wanted to jump head first into the long travel, coil-over rear suspension market, they'd need help, and they didn't have to travel very far to find it. By sheer coincidence, Öhlins, the legendary Swedish manufacturer of high-end F-1 and Motorcycle Grand Prix suspension systems, happened to have a distribution and testing facility just a few miles from Cane Creek's Fletcher, North Carolina headquarters. After preliminary meetings a couple years ago, marketing guy Joe Ward and head engineer Tom Reeder at Cane Creek began to see Cane Creek's large stock of intellectual property, patents ranging from headsets, to wheelsets, to air shock technology, and the suspension knowledge and manufacturing expertise of Öhlins, as a pretty powerful combination. The first product to result from the Öhlins partnership is the Double Barrel coil-over rear shock.

A Brief Lesson in Suspension

If you're like me, bicycles are the lens through which you've come to understand a number of things—suspension being a prime example. I knew nothing of shocks before installing my first suspension fork, but after



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years of following technology, I've developed a crude understanding of both air and coil shock technology. Here's my rule when talking shocks: remember, a shock is just a rod moving in and out of a tube, and damping—controlling the speed of that movement—is what keeps your wheel on the ground. Without this damping, you'd have an untamed spring bouncing down the trail.

But the tricky part of bicycle shock design is figuring out how to control the damping rod's movement so that it can absorb bumps without bouncing around. There are a dizzying number of ways to do that, both on the compression (moving in) and rebound (moving out) side of things. Shock engineers use things like stacks of one-way flexible shims, valve ports with size-adjustable holes, and pressurized gas reservoirs with valves that adjust at a predetermined rate of speed. In partnering with Öhlins, Cane Creek introduces a unique damping system to the mountain bike world. The new Double Barrel coil-over rear shock shares the same method of controlling oil flow as the Öhlins TTX40, a damping system that's proven itself in motorized racing the world over in events such as the 2004 24 Hours of LeMans and Africa's Motorcycle Grand Prix.

The Twin Tube Design

The key characteristic that separates the Double Barrel from the rest of the suspension world is its "Twin Tube" design. Whereas other shocks have a single damping rod that pushes oil through a specific path or "circuit" during compression and sucks it back through that same path during rebound, the Double Barrel essentially has two separate paths: a compression circuit surrounded by a separate rebound circuit (see large diagram on previous page). This allows for a much freer flow of oil. In the Double Barrel system, oil sits on each end of the piston and is either pushed through compression valves when you hit something, or pushed through rebound valves as the spring stretches the shock back out again. In short, it doesn't suck.

One result of this much freer flow of oil is that you have true independent adjustment of rebound and compression damping. The Double Barrel features four adjustments—high and low speed compression, plus high and low speed rebound. By following diagram 1, it's easy to see separate paths and separate valves for compression and rebound. Out on the trail, the shock automatically moves oil through the slow speed valve until a sharper impact shifts oil flow to the high-speed valve. You might have already guessed, but yes, cranking up the low speed compression is akin to making the shock "pedal-friendly," or, in marketing terms, it has a "pedaling platform."

This design is revolutionary stuff, and the Double Barrel doesn't really need a shim stack like you see on each side of the main shaft's piston. It doesn't need to pass any oil through its piston. But Cane Creek has seen a lot over the years, and they understand that without those shim stacks, it'd be possible to improperly adjust the shock to a point where it would destroy itself. That's just how sensitive a valving system like this can be. But by adding that shim stack, the Double Barrel is almost idiot-proof.

On the Trail

Evaluating a new shock on trails you haven't ridden in years, on a bike you've never ridden is about as difficult as it gets. However, it is fun. I spent a couple days riding just outside Asheville, North Carolina along with four other journalists and a host of local riding stars such as pro downhiller Chris Herndon. I rode a Double Barrel installed on a Specialized Enduro Pro, and was given the task of figuring out if it was worth its salt. Now, of course, if you have on hand a staff of experienced riders and engineers, the experience has the potential of being outstanding, and believe me, it was.

I first noticed that with the 325lb. spring installed, the shock had more sag than I imagined. I also noticed that with a smooth pedaling stroke, the shock barely budged on the climbs, which was surprising while sitting over a third into the travel. But one cool aspect of this design is that piston position doesn't really affect firmness of pedaling performance.

Before the second descent, Chris Herndon advised me to find bigger hits and let the rear wheel hit as hard as possible to see what the high speed compression and Twin Tube design could accomplish. Sure enough, he was right. The bike started to feel more like a sled than a mountain bike. I flatted twice on a technical portion, mostly because I couldn't feel the sharp hits and became more careless with my line choice.

My big travel bike (6 inches and more) ride time is limited to a handful of bikes, none of which have experienced Pisgah's trails, so I don't feel comfortable reviewing the shock under those conditions alone. Those impressions are best reported at the beginning of a long-term product review. But I can say that without paying close attention, it would be easy to improperly set up the Double Barrel. This isn't a plug-and-play shock like some others on the market. But if you understand the product and know what you want from the bike, there's a high degree of tunability and performance. This is a race day product designed to offer superior performance under any conditions. I also think it looks really cool.

As you read this, Cane Creek should have its first production run complete. Fit is limited to bikes with enough clearance for the piggyback reservoir, and availability is limited to those who can afford it and those who act quickly enough to acquire one. There's a price to pay for this level of technology—about $650 for a steel spring and $850 for the Ti spring version. But considering that Öhlins charges about $3,000 per shock (that's $12,000 to outfit a car), you could consider this shock a steal.

Future plans for this technology aren't set in stone, but I think it's safe to predict more air shocks and forks. If this product is a sign of what's to come from Cane Creek, riders are in for a pleasant surprise. ☮

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