

THE DRIVETRAIN DILEMMA

Companies committed to making true touring bikes operate in a niche largely ignored by the Big Two component manufacturers

by Dan D'Ambrosio

Let's say you're the lead bike designer for Novara, the bike line offered by REI for 32 years – every one of them including a dedicated touring bike – and you've just sat down at your computer to start working on next year's specs.

You will soon be dealing with a familiar frustration – finding the components you want for your new touring bike, particularly where the drivetrain and gearing are concerned.

“Over the years, it has been a bit of struggle as the two major component manufacturers for the North American market haven't put an emphasis on touring in their product development,” said Greg Golding, lead bike designer for Novara. “I won't name names, but both start with an ‘s.’”

Golding is talking, of course, about Shimano and SRAM, the two dominant component manufacturers. Neither has put an emphasis on touring because the touring market is a niche of a niche, a concept very familiar to Adventure Cycling members.

Ian Schmitt, a product manager at Kona bikes, home of the Sutra touring bike, said it's hard to make an argument to Shimano or SRAM for an expanded commitment to touring components when those companies are looking at the totality of the bike market.

“Drivetrains for touring-specific bikes is an incredibly niche thing,” Schmitt said. “The market isn't requesting it in enough volume to legitimize drivetrain companies listening to those consumers.”

Zach Stehley, purchasing manager for Co-Motion bicycles, says that not only have Shimano and SRAM paid little attention to the touring market, but Shimano has also made things worse by doing away with cross-compatibility between its mountain and

road bike components.

That means Shimano's long-cage mountain bike derailleurs, with their ability to handle the big cogs Co-Motion wants to use to get at least a 20-inch low gear on their touring bikes, no longer work with Shimano's road bike shifters.

Stehley explained that Shimano used to have a 1-to-1 actuation ratio with both types of components, road and mountain, meaning the shifters pulled the same amount of cable at the derailleur, making them compatible. No more.

“Now you can't use a road shifter to shift a mountain bike rear derailleur,” Stehley said. “That went away when they brought out the 10-speed mountain bike groups in 2010 and 2011. They have their reasons. The mountain bike cassette is shaped differently.”

In Co-Motion's world, touring bikes – including all 10 of the Eugene, Oregon-based company's models – have drop handlebars. That means road shifters, and that means Stehley had to find a way around Shimano's change of heart.

“What we do on our touring bikes is use an older 9-speed mountain bike rear derailleur with 10-speed road shifters,” Stehley said. “The older 9-speed rear cassette still has the older pull ratio. As long as you're pulling the same amount of cable, it works great.”

One option for drop-bar riders who want a low-g geared Shimano drivetrain is to ditch the cables and a chunk of money from their wallets and use the company's Di2 electronic shifting system to pair road shifters with an XTR Di2 mountain bike drivetrain, which could include a triple crankset.

“Today, we wish that we could make products for every category of rider, but unfortunately we can't. In the

future I think you will continue to see wider gear ranges being added to our road line up and more options for Di2,” said Shimano American Road Product Manager Dave Lawrence.

Shimano is still making the 9-speed XT rear derailleur, even though it quit making the rest of the group, because there are still companies like Co-Motion ordering a lot of them. Indeed the 2015 Novara Radonee also uses an XT rear derailleur.

“For flat-handlebar-touring cyclists, Shimano still offers triple chainring configurations with wide-ratio cassettes for incredible range. In Europe, for instance, most touring cyclists use hardtail or rigid mountain bikes for touring. With that in mind, Shimano continues to support this segment,” Lawrence said.

Novara's Golding has found another way around Shimano's incompatibility issues. The Shimano bar-con shifters Golding wants to use with the XT rear derailleur on the Radonee are incompatible, but a small Taiwanese company has come up with a solution.

“A company by the name of Microshift is making bar-con shifters that are compatible with Shimano's rear mountain bike derailleurs,” Golding said. “It's an interesting little company. They found a niche where the big players aren't putting a lot of focus and went after it. We're using their product for model year 2015 for a couple of dedicated touring/adventure bikes.”

Golding said he met representatives from Microshift at a trade show about 18 months ago and ordered some of their shifters to put them through rigorous testing before using them on the Radonee and other Novara models.

Touring bikes are important to REI, Golding said, because they represent

a unique opportunity for the giant outdoor retailer.

"Touring is the one bicycling activity where we really are able to outfit our customer from top to bottom," he said. "The bike, the clothing, the bag, the tent, the sleeping bags, and clothes. We're the one-stop shop for touring."

A six-pound maul

Ian Schmitt of Kona has a pet peeve where touring bike components are concerned: triple cranks. The default setup for touring bikes, he said, is a 26-36-48 triple crank paired with an 11-32, 11-34 or 12-36 cassette. None of those combinations work particularly well, in his opinion.

"I feel the triple crank is pretty useless," Schmitt said. "It has three

useless rings. The little one is on the big side. The middle one is too small to be a good driving gear all the time. The big ring — honestly if you're on a tour with 40 pounds of gear, which I think is a pretty good base line for week-long trips, the 48-11 is a huge gear, completely useless."

Schmitt is dumbfounded when he sees so-called "touring" bikes offered with a 50-tooth big ring in front, or even a 52-tooth or 53-tooth ring.

"It's like the product manager doesn't actually want to go touring," Schmitt said. "It's a longstanding frustration with me, the lack of availability of gearing that we find to be functional. It doesn't just extend to touring bikes, or just my models. It's an industry-wide problem."

Schmitt's dream set-up for touring

would be an 11-38 rear cassette with a double crank in front sporting a 22, 24 or 26-tooth small ring and a 40-tooth big ring.

"With that you start bleeding into the mountain bike side of things," Schmitt said. "It's always about striking a balance."

The 2015 Kona Sutra has a Shimano drivetrain with a 28-36-48 triple crankset in front and an 11-32 9-speed freewheel, using bar-con shifters.

"Right now, from our perspective, that's the best spec for the drivetrain while maintaining the price point we think is requested for the marketplace," Schmitt said.

The Sutra lists for \$1,499. Schmitt says it does very well for Kona and is the most visited page on the company's

PINION: A gearbox transmission for your bike

Christoph Lerman and Michael Schmitz, co-CEOs of Pinion, met as engineering trainees at the Porsche research center in Weis-sach, Germany. The two young engineers found they were on the same page on many topics, including bikes. Why, they wondered, is there a transmission in a car and in a motorcycle, but not on a bike?

"In a bicycle, there is this crappy derailleur with exposed shifting components which can easily be damaged and chain suck and all that stuff," Lerman said. "So our idea was to develop a gearbox which is in the middle of the bicycle near the gravity point and which combines the advantages of derailleur and internal-hub gears."

By 2010, Lerman and Schmitz were ready to present their first prototype, an 18-speed gearbox, at the Eurobike tradeshow, receiving, Lerman said, an "enormous response."

The Pinion gearbox, which requires a purpose-built frame, looks like something off a Porsche, making even an internally geared Rohloff Speedhub look like old technology. With 18 gears and an even wider range than Rohloff, the Pinion has an overall gear ratio of 636

percent compared to Rohloff's 525 percent. Suffice it to say the P1.18 offers a range of gears to suit any touring rider and coupled with a Gates belt drive, offers a quiet, reliable, enclosed drive train that requires only an annual oil change.

Last year, Pinion debuted three new gearboxes, a 12-speed set-up for touring and two 9-speed versions with different gear ratios covering every kind of cycling from mountain bikes to city bikes. These hand-assembled, precision-made

gearboxes do not come cheap, with the P1.18 adding about \$560 to the price of a bike with a Rohloff hub, which itself is an option that adds about \$1,600 to the price of a traditionally geared Co-Motion Americano.

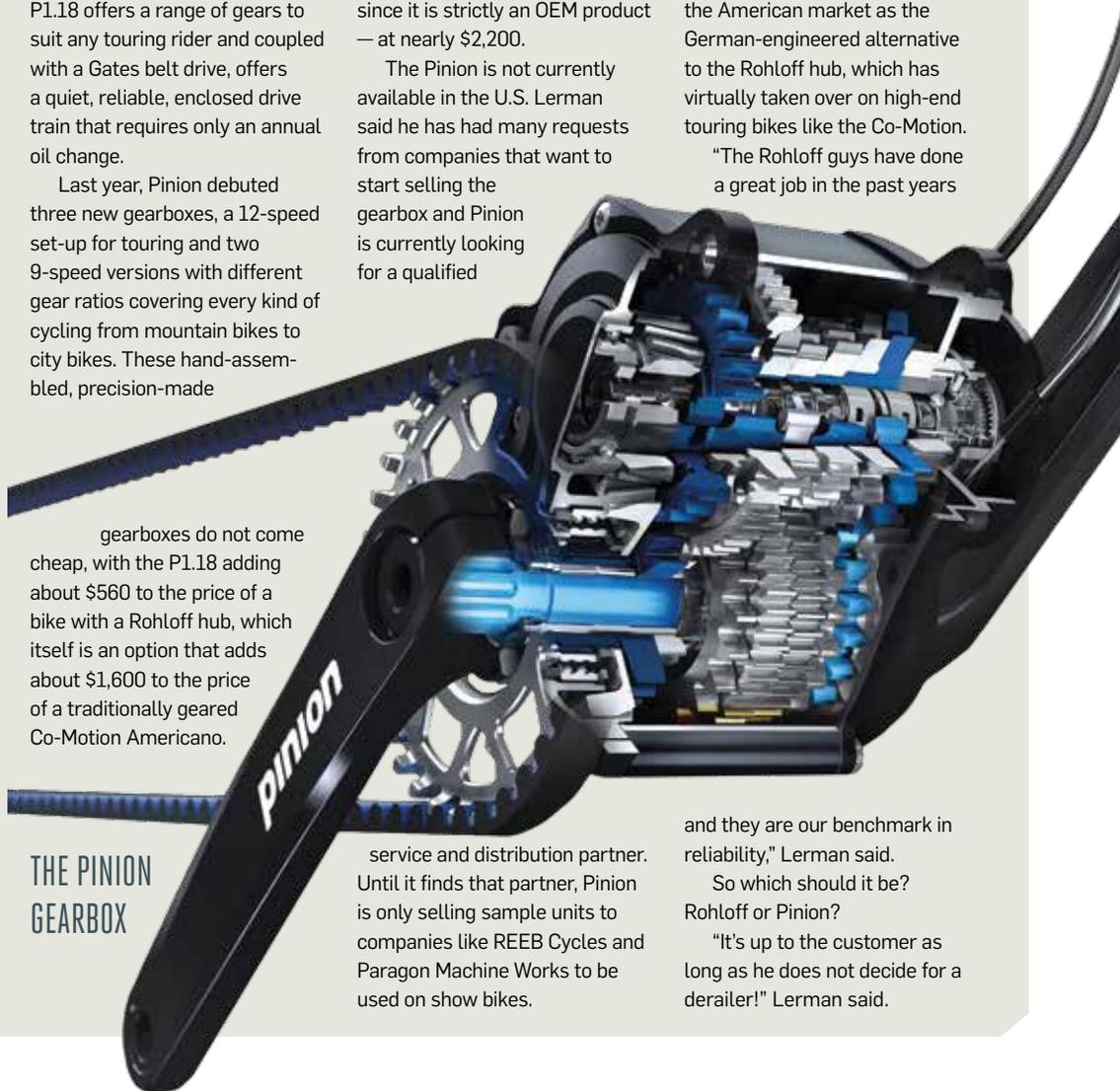
That puts the price of a Pinion — which officially has no retail price since it is strictly an OEM product — at nearly \$2,200.

The Pinion is not currently available in the U.S. Lerman said he has had many requests from companies that want to start selling the gearbox and Pinion is currently looking for a qualified

Pinion gearboxes will no doubt make their way into the American market as the German-engineered alternative to the Rohloff hub, which has virtually taken over on high-end touring bikes like the Co-Motion.

"The Rohloff guys have done a great job in the past years

and they are our benchmark in reliability," Lerman said. So which should it be? Rohloff or Pinion? "It's up to the customer as long as he does not decide for a derailleur!" Lerman said.



THE PINION GEARBOX

website with the most unique hits.

"We sell a pretty solid amount of those bikes every year, it's not a small portion of our yearly sales," he said.

In the end, Schmitt concedes that triples, as much as he dislikes them, are getting the job done for touring bikes.

"Yes, a six-pound maul will put finishing nails into your nice cabinetry, but there are better hammers for the job."

How low can you go?

What about SRAM's 1x technology, with a single chainring up front offered in sizes as low as 26 teeth, coupled with an 11-speed cassette in back ranging from 10 to 42 tooth cogs?

Schmitt did a tour in Wisconsin using a 38-tooth chainring coupled with an 11-36 cassette, carrying 35 pounds of gear.

"I honestly never got out of the bottom half of the cassette — the six hardest gears — it was pretty flat,"

Schmitt said. "I think the range is there for someone who is a strong rider with a relatively light setup. It wouldn't be my choice to ride up and over Highway 20 into eastern Washington."

Schmitt works in Kona's offices in Ferndale, Washington.

"We have given a good bit of thought to gearing options for different riding situations. Our Force CX1 1X groupset could be a great option for light touring with a 38 tooth CX1 crankset paired with the new PG 1170 11-36 cassette," said SRAM Road PR Content Manager Dan Lee. "For heavily-loaded touring, especially in hilly terrain, it's worth noting that SRAM's mountain and road components are cross compatible."

Zach Stehley of Co-Motion concurs with Schmitt that when it comes to touring bikes, it's all about low gears.

"We also don't want to give up the high range, but our philosophy is get low enough to get up hills," Stehley said. "If you run out of gears on a downhill you can always coast."

When Stehley thinks about a touring bike, he thinks about a bike with front and rear racks, loaded with 80 pounds of gear. That means a low gear, in Stehley's mind, of about 20 inches.

"That's kind of our target," he says.

SRAM's Lee suggested a traditional option to achieve 21 gear inches would be to run the company's 10-speed DoubleTap road shifters with a 42-28 mountain bike crankset and 11-36 cassette. Increasingly though, Stehley sees the German-made Rohloff SpeedHub 14-speed internal hub as the way to get there. Stehley said Co-Motion has seen a "surge in popularity" for the Rohloff since the company began offering it in 2010.

"We have seen massive growth in that hub as far as sales," he said. "It used to be we thought we would sell a dozen in a year. Now in the past year, half the touring bikes we sold were sold with the Rohloff hub and belt drive."

Stehley declined to give the actual number of units sold because he doesn't want to share that information with the competition. Stehley sees many virtues in the Rohloff hub. He said he can fine-tune the gearing by adjusting cog sizes in the rear and ring size in the front for the belt-drive crank.

"You want to set that bike really low for offroad touring on gravel roads and you have that option just swapping out rings and cogs," Stehley said. "For paved road touring, you want higher ratios. Rohloff gives you that versatility and is far more future-proof than a traditional drive train where you have to worry about Shimano discontinuing its wide-range derailleurs, etc."

Rohloff-equipped touring bikes come stock from Co-Motion with a low gear of around 18 or 19 inches, and a high gear of 91 or 92 inches, achieved with a 50-tooth chainring in front and a 20-tooth cog in back. Shimano's alternative — the Alfine 11-speed internal hub — is fine for medium-duty touring bikes like Co-Motion's Cascadia, Stehley said, but not fully loaded globetrotting.

"The Shimano Alfine does not have a reputation for durability and is very difficult to gear low for touring," he said.

Shimano sets a minimum drive ratio for the Alfine of no lower than a 2.3 difference between front ring and rear cog, which puts the lowest gear possible at 26 or 27 inches. Any lower and you void the warranty, Stehley said.

"Rohloff's initial drive ratio gives you a lower gear," he said. "It's beefier and better engineered. There's a reason why it's more expensive."

How expensive? The Americano Rohloff will cost you \$5,645, compared to \$3,995 for the Americano with a traditional derailleur drivetrain.

"It is certainly a big initial investment, no doubt about that," he says. "We guarantee our frames for life. When someone buying a Co-Motion is buying for life it's not a big stretch to buy a drivetrain for life. The only thing you have to do to the hub is replace the oil every few thousand miles. When you add up servicing you're *not* going to do, at that point it starts to pay off."

Co-Motion's experience with Rohloff has been one of bulletproof reliability, but Stehley understands that not everyone is enamored with the hub.

"It's a black box technology," he said. "Some people get spooked. Some people like to tinker. But look at the flip side of that. If you're a glass-half-full bike tourist, you just want to buy the most reliable piece of equipment out there and not worry about throwing a derailleur into the spokes, or dropping a chain."

The Rohloff also shines, Stehley said, for those customers who buy their touring bikes with S&S couplers so they can pack them up for flying, because the belt-drive is grease-free and therefore clean and easy to stuff into the travel case.

Back at Kona, Ian Schmitt leaves us with a cryptic glimpse into the future for touring bike componentry, declining to elaborate for now.

"The future of touring bikes is super exciting," he says. "There are a lot of things coming down the pike that will start changing the way people tour." **AC**

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