

Recumbent Cyclist News

RCN 090 A Publication by and for Recumbent Enthusiasts — Since 1990 Nov/Dec 2005



RANS 2006 Fusion with DEEP RISE bars is available in yellow. The Cruz model is available in orange.
Photo courtesy of RANS



The 2006 Burley Spider with its unique rear suspension and new Fox shock, see page 16



The 2006 RANS Fusion Cruz with "Deep Rise" handlebars

The RANS Fusion

Crank Forward, Comfort Cruiser Sort of Upright, Semi-Recumbent

By Bob Bryant

BIKE: Fusion
BUILDER: RANS
ORIGIN: USA
STYLE: CF (crank forward) design
USE: Recreational, commuter, touring
PRICE: \$895

The Fusion is RANS' offering in the hot new crank forward market. So what is a crank forward bicycle you might ask. Well imagine a classic cruiser style bicycle, extend the wheelbase, a few inches, move the seat rearward and low it and add some rise handlebars — and there you have it — the crank forward Fusion. With the lower seat, can sit flat footed while stopped, and have proper leg extension when you pedal, like a long wheelbase recumbent.

While this market may not seem HOT to recumbent riders, this design has become very popular in the mainstream with companies like Electra Townie, Giant Suede and others. The RANS Fusion line is THE enthusiast crank forward product. The term Fusion can be defined as the melding of the recumbent and the upright bicycle — a place where both designs display their best attributes. RANS has been working on a crank forward upright for years. I can remember first riding the ZeroG at Interbike back in Anaheim, California almost ten years ago. The Fusion is an evolution of that design.

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See our website or call

QUESTIONS?

Please email if you can, see above. Sorry, we don't return advice calls, but are happy to chat if you call us when we're in, or via email.

TEST BIKES

Most RCN test bikes are loaners provided by the builder. Sometimes we buy or barter for them, and resell the bike/trike after the review is written. If you are interested in knowing what we have for sale, drop us an email.

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Editorial License: Crank-Forward 101

by Bob Bryant, Publisher, bob@recumbentcyclistnews.com

For years, the bicycle industry has been searching for a way to mainstream recumbents, and it seems they have found it with a new type of bicycle: the crank-forward (CF) — the most comfortable upright bicycle you've never heard of. Electra has trademarked the term, "Flat Footed Technology™", which pretty much defines the CF genre (you can sit at a stop flat footed, and ride and still pedal with a correct leg extension). Imagine an upright comfort bicycle with the wheelbase extended slightly, seat moved rearward and lowered, a larger cruiser-style seat, and riser handlebars. According to their designers, the CF bikes offer the majority of the benefits of a recumbent without the added complications. The most expensive and complicated aspects of the recumbent — the special seat, the non-standard drivetrain and the chain idlers — have been eliminated. And best of all, these bikes are affordable, 21- and 24-speed models retail for \$350-\$500 and up.

MODERN HISTORY

Semi-recumbent-like models have come and gone from the market for years (including the Vision Thoroughbred and RANS ZeroG), lightning really struck when Electra, the cruiser bicycle manufacturer, unveiled its new Townie line in 2003. With full-page ads in the trade magazines, Electra ran photos of three bikes; on one side a classic Electra cruiser; on the other a LWB recumbent; and below, a Townie, a melding of the two. Electra's concept was nothing short of brilliant. It is trendy, stylish, and appeals to all ages and abilities. Electra found a way to put the package together. Since then, Giant, Cannondale, K2 and others have followed suit. More are sure to jump on this band wagon.

RANS president and designer Randy Schlitter has been tinkering with semi-recumbents for years, predating both Vision and Electra. The original Fusion models had 26/20 wheel combos. About the same time the Townie was introduced, RANS made the transition to dual 26" — which has him into a new "big wheel" design phase at RANS.

AN IDENTITY

Most of these bikes are being sold as comfort, cruiser and lifestyle (mode/fashion) bikes. Because of their user-friendliness and comfort, they can be used for just about any style of riding, from cruises to the coffee shop to organized rides and anything in between. So far the Townie-style bikes are being sold



Fusion riders — photo courtesy of RANS

CF BENEFITS

- No wrist, arm or neck pain
- Ability to stand on pedals to climb hills (some models)
- No learning curve
- Easier to adjust (upright bike seat post)
- Familiar: Looks like an upright bike
- More aerodynamic (than an upright)
- Easier to stop/start (than a recumbent)
- Can be lighter than recumbents
- Simpler than recumbents
- Easier to work on
- Easier to transport
- Lower cost (\$350 and up)

CF NEGATIVES

- Still new and different
- Little back support
- Harder to find a test ride
- Not as fast (as similar uprights or fast 'bents*)
- Do not climb as fast (as similar uprights or fast recumbents*)
- Heavier (Townies, etc.; not the Fusion)
- Minor lower back pain (some riders & models)
- Possible recumbent butt (deweighting your seat is possible on some models)

to new riders to those who are not comfortable on a regular upright. RANS' Fusion offerings could change all this.

"The suede's unique frame design makes it easier to ride, easier to touch the ground, all around more fun" — Giant Bicycles.

Continued on page 22

Recumbent News

RANS STRATUS XP UPDATE

"Within hours of posting the existence of the Stratus XP, we were sold out. Orders are coming at a nice pace, and people are liking this bike. I cannot imagine a more appropriate bike to create a buzz, since it is well rooted in the classic Stratus. The Stratus XP will lead us into a new era of LWB development, which will transcend more than our brand. Now the 'funny' looking bikes in our factory are the ones with little wheels up front!" — Randy Schlitter

XP Pricing update: The base price of the Stratus XP is \$1950. Buyers have their choice between the T-Bar or 3-Way bar (chopper) as no charge options; The RANS Featherweight seat cover (saves .7 pounds) is also a no charge option; Primo 26 x 1.5 Tires Primo Comets are included, the Schwalbe 26x1 110 psi Kevlar tire are \$60 per pair; The Carbon Fiber seat pan (saves .7 pounds) is an additional \$60; Tektro Aquila disc brakes and Velocity Thracian wheels are an additional \$270; Velocity Thracian wheels only are \$230 per set.

Source: <www.ransbikes.com>

2006 STRATUS LE By the time you read this we'll have taken delivery of our 2006 Stratus LE test bike, with 3-way chopper handlebars and fabric fairing for an upcoming review.

ROTOR INTRODUCES EGG RINGS

ROTOR's corporate mission is to develop technologies to help all cyclists. In recent years our Company developed the ROTOR System Cranks, which became the definitive solution to the dead-spot. ROTOR's new challenge is again to succeed where many other failed before, by introducing new ovalized (elliptical) chainrings.

The Rotor Q-Ring is different from other ovalized chainrings. Q-Rings give you more power during the pedal down stroke, just after the moment you develop maximum power, when you are generating 90% of your power output. Rotor OCP (Optimum Chaining Position), is a Rotor patented feature is the secret to success, where others have failed. The patented system allows you to choose the angle where you obtain the maximum gear ratio, customizing pedaling to each and every cyclist, where you need it most.

Q-Rings will make it easier to pedal at high cadences when power requirements are higher and offer better power delivery due to the modulation of the gear ratio every moment.

Q-Ring Features

- Easier to pedal at higher cadences
- More power during the downstroke
- Less knee pain
- Quick adaptation
- Lightweight and quality
- Latest technology with simplest mechanics

Q-Ring Sizes

- Road 53/40T for Shimano and other cranks using the 130 BCD
- Road 53/41T for Campagnolo and other cranks using the 135 BCD.
- Road 50/36 for FSA and other Compact cranks using the 110 BCD.
- MTB 44/34/24T for MTB cranks (XT and similar)
- 104/64 BCD

Other Q-Ring sizes will be come available in the future. The 30T (and maybe 26T) road triple inner Q-Rings might become available in spring of 2006. The price for the road double (rings) \$200 and they will be available in January.

Source <www.rotorbike.com/Q>

FULL LENGTH CANOPY

One of the few drawbacks to recumbents, both bikes and trikes, has been the exposure to the elements. Recumbent commuters especially have had to deal with the daily varieties of weather. Too hot and you roast, exposed sunny side up. When it rains, your lap becomes a wading pool. And when it's cold, it's really cold on a bike.

Now there is an answer. A full-length canopy fairing that protects not just from the wind,

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Mark Murphy's M4 canopy

but from rain and sun as well. We make the canopy for our Aerocoupe electric racer kits at Blue Sky Design in Creswell, Oregon. but the M4 canopy is available separately for do-it-yourself recumbent experimenters.

The canopy is almost six feet long and blow molded for optical clarity out of tinted (think sunglasses) acrylic plastic. \$350 + shipping. I adapted one to fit my BikeE using aluminum rod, tube and strap, along with a few ball end fittings. The result is a striking visual effect as well as vastly improved aerodynamics. The complete coverage it affords me solves my weather problems without being cocooned in a complete shell.

The front of the canopy attaches to the fork head tube and the rear is supported off the top of the seat back. The canopy pivots up about 12 inches to facilitate exit and entry.

Riding with the canopy is almost surreal. No wind noise in my ears for instance, although I can now hear much better to the rear, a safety feature that alerts me to approaching traffic. Aerodynamically it's like punching a hole in the air. I can ride at least one or two gears higher with the same effort. The tinted plastic reduces the heat load dramatically too over a clear canopy. I wouldn't want to ride at night with it of course and lights and reflections create distracting visuals in the dark.

The canopy weighs about 8 pounds and doesn't seem to effect balance noticeably, although I haven't tested it in blustery conditions. Some care is required in parking the bike so it doesn't fall over on its kickstand. The potential applications for tadpole and trike three wheelers is even more exciting! Without any stability problems and inherent low-slung designs, the trikes should be in Aerodynamic heaven with the M4 canopy! I want to try that next!

There are no ready made fit kits for mounting the M4 canopy to a recumbent, but Instructions on how I made mine to fit the BikeE are available and can probably be adapted to many bikes.

Source: <www.blueskydsn.com>.

HPV RAAM

Congrats to Team ALS Bacchetta was one of two 4-person recumbent teams in this years RAAM or Race Across America, a coast-to-coast bicycle ultra marathon. (ALS is Lou Gerhigs disease.) Team Bacchetta's competition was against Team JRDR VeloKraft riding to raise awareness for the Juvenile Diabetes Research Foundation.

RAAM covers 3051.7 miles between Pino Valley, CA and Atlantic City, NJ — riding through CA, AZ, UT, CO, KS, MO, IL, IN, OH, WV, MD, PA and NJ. Team ALS Bacchetta finished in 6 days 03:36 with an average speed of 20.7 mph. Team JDRF VeloKraft finished in 6 days 15:46 with an average speed of 19.1 mph.

In 2004, Team ALS-Lightning became the first team across the finish line with a time of 5 days 06:58, finishing hours before the #2 team with speeds reaching 32 mph and an average in the mid 20's.

<www.bacchettabikes.com/raam-news.htm>
<www.raceacrossamerica.org>

BIONX ELECTRIC ASSIST

By Jeremiah Mangini

This is a great system for those of us who need a bit of help on the hills. If your knees and legs have been screaming at you every time you go near the bike, or when you get off, this just might be the answer — it has been for me!

BionX is really trying to make this system work on most all bikes. I did a bit of retrofitting on a small frame Tour Easy. This actually is not necessary as you can put the battery just about any place (in the pannier bag, on the rear rack, etc.); or you can mount it where I did with a bit modification.

The motor is very quiet. One of the great features of the BionX is that when you don't need an assist, it doesn't draw the battery down. You can also charge the system when braking.

Recently I did a 27-mile ride with the Spokane Bike Club, my first ride with others in a long time, and I was more than able to keep up with the group and pass many on the hills. There were quite a few rolling hills, and I was able to double my usual hill speed, i.e. BionX leveled the hills. By the end of the ride I still had used only 80% of the battery power. Some folks were not even aware that I had electrified the bike until I explained it. I'd noticed that some others in the club have not been riding their bikes due to the same problems I have, so after researching for a good assist (not a motor bike), I decided to become a BionX dealer and maybe help others get back on their bikes and out getting exercise and having fun again. I hope to be working with BionX closely for the recumbent conversions. They make a 20", 24", 26" and 700c. As of now their wheels are fitted



Left: The BionX kit



A Greenspeed trike with BionX kit, photo courtesy of Greenspeed



Jeremiah's BionX Tour Easy

for a freewheel (I used a 7 speed 11-34). The kit is approx. \$1000 retail. ♦

For more information, contact:
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ezrider1935@msn.com or tel. 509-725-4249.
<www.bionx.ca/>
<www.greenspeed.com.au/newsletter7.htm>

GULF COAST CATASTROPHES

At this time our thoughts are with the people of the Gulf Coast region of the USA after the devastating gulf coast catastrophes. We have a few dozen subscribers in Louisiana and Mississippi whom we're waiting to hear from. We have one advertiser from New Orleans, **Laid Back Tours**, we recently heard from them: "We successfully evacuated New Orleans. We are safe. We are currently refugees in Madison, Wisconsin. We thank you for your past business, concern, and friendship. Today, we cry for our beloved city, our people, our culture and the soul of New Orleans. In the face of this tragedy, we are trying our best to remain hopeful for the future of New Orleans and it's people. We hope to go back and rebuild our lives whenever we are allowed back in the city. Love, Veda & Musa, Laid Back Tours." ♦

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Letters to RCN

If you have a comment, or a differing view or experience, send us a letter. Please limit your letter to 300 words. We reserve the right to edit for clarity, content and space limitations. Write: <bob@recumbencyclistnews.com>.



David riding the WizWheelz Edge

WIZWHEELZ EDGE

It is exciting being on the EDGE! WizWheelz has created a trike that I merely ride around in and people beg to take it for a test spin. With just a quick adjustment of the seat to their exact specifications they are able to have a trike that fits them perfectly. Having dialed in my seating position I've found this trike incredibly quick, supremely comfortable, and refreshingly convenient to ride for commutes or centuries, but also then to just pick up and pack away.

Three big factors make this trike so easy to ride: its low weight, adjustable seating and direct steering. First, the 28-pound EDGE allows one to keep pace with other cyclists when ascending hills; second, the various settings for seat placement mean that the rider can find an optimal position for comfort and "power transfer;" and finally, the EDGE's direct steering imparts great confidence and ease on fast descents.

The EDGE accomplishes all this with overall physical dimensions that make for ease of passage through a normal doorway opening or for transporting the trike in the back of a vehicle — it fits diagonally behind my back seat in my compact station wagon! And when I lift it, I don't get chain lube on my hands or in the vehicle since most of the chain travels through a frame tube.

I believe that WizWheelz, in creating the EDGE, has raised the standard for recumbent performance trikes to a new level of performance, comfort, and convenience. Performance is one aspect that's relative, but there can be no doubt that this trike will be among the fastest that one can buy — at any price. Personally, I now feel no "hill handicap" when out riding with my bike club roadie friends, and being able to say that speaks volumes. Comfort has been one of the standards of WizWheelz design from the very beginning and the EDGE continues that tradition in a very refined manner. Finally, this trike is now conveniently available at nationwide dealers at a decent price. My recommendation: get on the EDGE!

David Lawson

DAKOTA REVIEW RCN 090

Thanks very much for your excellent Dakota review. I think you captured the essence of the bike. You even managed to convey cor-

rectly that I'm somewhat cranky about the design of Barcroft bikes. For your future files, all Barcroft Virginia and Dakota bikes from now on (i.e., 2006 models on) will have sliding booms and be powder-coated. We've finally found a good Baltimore powdercoater (thanks to the Baltimore framebuilder Tom Bruni, who sadly died earlier this summer in a bike crash). The tandem Columbia will also be powder-coated.

Bill Cook, Barcroft Cycles
www.barcroftcycles.com

Editor's Comments: Bill, we love it when a busy builder takes the time to comment on our reviews. We spend many hours setting up the bikes, riding, pondering and writing about the bikes — and we really appreciate it when we hear feedback (good or bad). We also received a call from Paulo Camasmie (Catrike Speed review) and an email from Randy Schlitter (RANS Stratus XP review). Thanks!

COUNTERPOINT TRIKE WITH 36,000 MILES

I ride a rare Counterpoint Triad tadpole trike. It was built in the mid-1990's as a three-wheeled version of the Counterpoint Presto SWB recumbent. The Triad has above-seat steering, a 20.5"-high seat, an 18.5"-high bottom bracket and elastomer seat suspension. I currently have 36,707 miles on this trike. My gear range is 16-90 gear inches. I'm running Conti Top Touring tires that have 8,800 miles on the fronts and 6,500 on the rear. After wearing out two suspension units, I removed the suspension. I have found that seat angles of less than 60 degrees cause neck and shoulder problems that I fought for years on wedgies [upright bikes - Ed.]. I am quite happy with my Triad and continue to ride 3,000 miles per year, but I am nervous about the life expectancy of the Triad. You reviewed many trikes in RCN 088, none of which would meet my needs. I am 81 years old and question my ability to get up from seats that are so low, plus I can't handle the very reclined seat backs. I hope to see reviews of tadpoles like mine in the future.

PS: I realize that my Triad may well outlast me!

Donald Cockeram
Richland, WA

Editor's Comments: Thanks for the great letter. I think you've got your money's worth from the Triad. While this is a rare trike, those who own them seem to love them. The recumbent movement is moving towards lower, more laid back and more performance oriented models. Perhaps this letter will serve as a wake-up call to would-be builders who would like to build taller commuting and touring trikes. The only that come to mind for me are the Lightfoot, Sun and Human Powered Machines delta trikes.

SAFETY SWERVE

Local bike riding for me in Port Townsend, Washington, often starts on Hastings Road, a narrow asphalt road with no shoulders. Although the posted speed limit is 35 mph, cars and trucks often pass at 50 mph or faster. I ride a recumbent and I use a rear view mirror, and sometimes I see that approaching cars and trucks apparently aren't going to give me much room. Still worse, a car may be approaching from ahead of me, while the one in my rear view appears about to reach me at the same time, and believe me, these folks are in a hurry.

I can almost read the mind of the vehicle driver behind me, espe-

cially, it seems, if he drives an SUV. "I'm a skilled driver, and I know I can fit between that car and that bicyclist, no sweat!" I've been closely shaved like this in the past, and when you consider that maybe as many as half the drivers on the road have less than an average IQ (and many may have had a license for only a few years) this is a terrifying proposition.

My current solution is simple. If I see this situation developing (or if it looks like I won't get much room), I swerve when the car is about 100 yards behind me. Nothing really fancy, just a loopy swerve perhaps two feet out into the roadway and back on my line. All of a sudden the driver behind me is not so sure. His skills are adequate to the task, but apparently my bike riding skills, my sanity, or both are second-rate, so threading the needle might lead to scratching his paint job or even denting his new car (in addition to having to call for an ambulance on his cell phone). Since I've started using this technique I've never had a problem with close approaches by such "highly skilled" drivers.

Remember, it might be good to practice this swerve when no cars are in sight. Also, swerving while the car is upon you can lead to bloodshed (do the swerve well before they arrive), and a rearview mirror is an essential piece of equipment for successfully performing "the safety swerve."

Chet Rideout
chetride@msn.com

Editor Comments: Use this technique at your own risk, I know I do.

DELTA MYTHS

I wanted to add some notes to John Lindsay's excellent practical and factual review of the Sun delta trike, concerning characteristics which may be true of the Sun trike, but which should not be extrapolated to all delta trike designs.

The Sun trike uses an ordinary "adult trike style rear end, with a solid or two-piece axle between the rear wheels. This configuration imposes several limits on the transmission.

First, John expressed his disappointment in the narrow gear range, which was both too high for climbing and too low on the high end. This is not a failing of all deltas. Both the Penninger and the Lightfoot use a jack shaft transmission system that incorporates an additional mid-drive sprocket, allowing for compound gearing. In the case of the Lightfoot, the standard gear range is from 9 gear-inches to 120, with a choice of 10 to 15% changes between gears.

Secondly, there is no choice of wheels with the "adult" rear end, and repair of a damaged rim or hub may involve lengthy waits for factory-built replacements, or in John's case, buying \$466 worth of replacement rear

wheels. I believe that the Lightfoot delta designs are unique in permitting the use of any ordinary (and affordable) 26" rear wheels.

John noted that carrying a load on the rear of a delta is limited by the fact that it is already heavily loaded by design. Unbalanced cargo loading, however, is very avoidable. A jack shaft transmission opens up the space between the rear wheels. Cargo placed between the rear wheels, as done on the Lightfoot models, is distributed in front of and behind the rear axle, neither weighting or de-weighting the front wheel.

Another loading issue was mentioned by John as being common to deltas, the tendency of the front wheel to de-weight and "skate". This is often, but not necessarily, true of a delta. Lightfoot models are carefully designed to have about 30% of the weight on the front wheel.

A myth that John did not mention, but bears mention here because it accompanies the delta wherever it goes, is that the tadpole configuration is superior in that it is stable while the delta is not. A little less stability can be quite workable, as anyone who drives a mini van instead of a Ferrari will tell you. It is true that in the worst case (emergency braking and turning) having the wide end of the trike forward is to be preferred. There are deltas that require the rider to lean into sharp turns (such as the Hase and Penninger models), and there are delta designs that are harder to get up on two wheels than many tadpoles (such as the Lightfoot RoadRunner). And, almost any delta becomes more stable as it is loaded.

As John shows us, there is plenty of room for delta trikes in the recumbent pantheon.

Rod Miner
Lightfoot Cycles Inc.

Editor Comments: We'd love to review a Lightfoot delta trike, how about it Rod?

USX UPDATE

After having my trike wheels custom built (RCN 89 page 15) the spokes started working loose every few weeks because the shop copied the light duty wheel's offset dish pattern (that came with the trike).

I asked several trike and quad builders about the problem. They said wheels with rims centered between the flanges are much stronger (symmetrical dishing).

I took the rear wheels in to Mike's Bikes (.com) in Sequim, WA, and paid \$50 to have them reconfigure the spokes with high tension on both sides. Low tension on one side was the cause of the problem.

John Lindsay
jawnn.geo@yahoo.com

Editor's Comments: I saw John the other day and he has since tied and soldered his spokes which he says has been working better.

BENEFITS OF TRIANGULATION

In your review of the RANS Force 5 you missed the biggest benefit of a triangulated frame: bending. On a monotube, your weight tends to bend the frame down under your butt. Because you are sitting on top of the tube, like a giant pushing the towers apart on a suspension bridge, the middle tries to rise and fall with every pedal stroke.

As a BIG rider (6'6", 250 pounds), my monotube Phantom (with 300-pound option) flexes no less than 1/2" when I sit on it. And being a fairly strong rider, my energies noticeably make me go up and down rather than forward. It seems to me it's a basic contradiction that a recumbent frame is designed to flex for a smooth ride, but must be stiff in the same direction for maximum pedaling efficiency. In addition, the typical rear dropout mounted seat stay bypasses the passive suspension entirely and road shock enters the upper back and neck directly, the areas most sensitive to it.

I see this as a basic failure in both the RANS and Bacchetta design approaches. As a remedy, I suggest a new direction in recumbent frame design: make the middle-forward part of the frame very stiff and concentrate the tuned flex rearward of the seat pan. Also, the rear seat stay attachment must be moved away from the rear axle and attached closer to the inflexion point, maybe half-way up the chainstay or on a seat mast off the main frame. This would supply more than ample support for the seat back with little additional frame stress.

Currently there are few, if any, unpended frame designs which follow these principles. Using them in the next generation of recumbents can mean a smoother ride and greater efficiency all around without adding heavy suspension.

John Duval
catgita@worldnet.att.net

Editor's Comments: There are two different issues here: The first is ride comfort for recumbent bicycles, and the second is about highracers in general. Certainly design changes could be made to improve the comfort on some recumbents. Two bikes that look similar can ride differently. We've experienced this recently in both our tadpole trike and long wheelbase reviews.

Now back to the matter at hand: Highracers are designed for performance, and like a diamond-frame road bike, this means a stiff frame so that no power is lost. Some designers will choose a lightweight (monotube) frame design over a stiffer triangulated frame for aesthetic reasons, to save weight or for a more shock absorbant ride. Larger riders might find a bike like this too flexible.

. . . Letters continued on page 24



Our 2005 test bike with unavailable tall stem and 2005 2.5" rise bars

"Sporting an aggressive straight tube frame and dual 26" MTB wheels, the '06 Fusion is well suited to many riding tasks. Do the short haul, commute or tour the nation. Primo Comet high-pressure tires deliver low rolling resistance and are sized to handle less than perfect roads. Our laid-back frame geometry relieves hand and wrist pressure, and allows flat-footed starts and stops. Custom RANS poly spade seat is the outcome of body position design. Standard with a high density closed cell foam seat cover (removes for washing). Like all our relaxed geometry bikes, the Fusion has impressive climb and cruise speeds. To climb, stay seated and pull on the bars! Seat position adjusts in tilt and height with quick release levers for fast set up and perfect fit. Built on a top notch handcrafted 4130 Chromoly frame, the Fusion is made in middle America by people who care about your position to ride."

— Randy Schlitter, RANS

USE/UTILITY

The Fusion comes in FOUR models and can be used for just about any purpose:

- Standard: Is the all-rounder (\$895)
- Cruz: Similar to standard but with stylish curvy tubes and new orange paint (\$995)
- Dynamik: The off-road version (\$1150/\$1385 w/susp. fork)
- Zenetik: 23-pound road version (\$1995)

There is also rumor of a Dynamik tandem and 700c Zenetik coming for 2006. The Standard and Cruz share a more relaxed longer wheelbase design that doesn't allow you to stand on the pedals to climb. The Dynamik and Zenetik have a 2.6" shorter wheelbase with a more aggressive geometry that does allow riders to stand up when they climb. This might be a plus if you're coming from the upright camp, but as a recumbent rider, I rarely stood up while testing our Dynamik model (I rode both models about the same amount of time and miles).

COMFORT

While the more mainstream CF builders are using variations of comfort/cruiser bicycle seats (that may not be that comfy to recumbent riders), the Fusion uses a proprietary RANS Poly-Spade seat. It just may be the most comfortable upright bicycle seat ever made. I've tried many different seats on my upright city bike, including gel, classic sprung leather, modern cutaway and even those goofy hornless and easy seats. The Fusion seat is light years ahead of anything out there. The downside is that it only works on the RANS Fusion bicycle.

The Fusion saddle is lighter than most, it flexes a bit and is very adjustable. It has a smartly designed quick-release height adjuster which allows riders of many heights to use the bike with a quick adjustment of the seat post. A track in the seat post has the seat always pointing forward — which is brilliant. A second quick-release allows angle adjustment for the seat. I have the seat about 95% to the top of the angle adjustment (flat). With

this I can feel the seat edge on the back of my thighs just a bit. When tilted forward, I can feel the seat back edge on my tailbone. A few adjustments and you'll have the seat angle set to perfection.

It's fairly easy to find the right seat height. Leg extension is similar to a recumbent bike (with one heel on the pedal you should be able to put one foot flat on the ground). First you set the height so you are flat-footed while seated (or perhaps a tad higher than that depending on your preference).

RANS uses their thin pad technology (integral seat cover and foam) on all models. Some riders may find the seat lacking in cushion (foam). RANS' Randy Schlitter suggests adding a layer of 1" open cell common upholstery foam to increase comfort. He warns, "However it will diminish the feeling of being IN the seat."

The Fusion and Cruz have a molded plastic seat shell, much like the standard RANS recumbent seat, and the Dynamik and Zenetik have lighter weight carbon fiber seat shells. There is no seat back, and none is needed on this bike.

FIT

The Fusion fit everybody here at RCN from 5'3" to 6' tall (official range is 5'1" to 6'4"), all with the flick of the seat quick-release.

RIDE

The Fusion rides like a laid back hybrid road bike, just one head lower and with much more comfort. Because it's essentially a diamond frame bike (DF), it feels more maneuverable than any recumbent. The Fusion is extremely user-friendly and requires a minimal learning curve. The added upright-like gyroscopic feel and full-size wheels make the bike feel very stable at all speeds. The ride quality is very smooth and the bike felt light and fast. The downside is that road imperfections can turn into big bumps and you can't deweight your seat (Standard & Cruz).

Climbing: All of the Fusions are good-climbers. The Dynamik and Zenetik are the best because you can stand (if you want to), and the Zenetik is quite a bit lighter than the other models. The technique has you pulling yourself towards the pedals to develop power for acceleration and climbing. This is a fairly aggressive style. The alternative recumbent method would just be to gear down and spin like on a recumbent. Be sure your Fusion is geared adequately. Most models have road triple cranks which offer gearing that is too high for the hilly terrain where I ride.

Performance: The Fusion offers spirited performance. Acceleration is a bit quicker than most recumbents, as is starting out from a stop or on a hill. I find the performance light and quick around town. It's every bit as

fast as most of our test bikes in this respect. It's easier to climb with than many bents, and is a much more manageable bike. I must say that it isn't as fast as our recent V2 Formula, Stratus XP or Force 5 in all-out speed tests or on our fast test loop. However, I'd choose it over any of these bikes for my commutes to the store, to go grocery shopping, tow the trailer, or a run to the coffee shop.

Certainly your performance will depend on which model, and your own fitness. Generally, I'm faster on the Fusion on my commutes and riding around town, but my top speeds are higher on performance-oriented recumbent bikes.

FRAME

The Fusion frame is of 4130 aircraft Chromoly tubing that is TIG welded in RANS' Hayes, KS factory. The frame and unicrown Chromoly fork are painted and the craftsmanship is among the finest I've seen on either a recumbent or upright. Because the bike is so simple, it should be more trouble-free and cheaper to own and maintain than a recumbent.

Fork: The stock fork is Chromoly, but an aluminum model is optional, and save .25 pounds.

Steering: 2006 standard and Cruz model Fusions will have had a threaded fork, with a stem stub inserted that attaches to a RANS toplayer stem and RANS DEEP RISE handlebars, all black with RANS logo. The first two Fusion models we tried had 2.5" riser bars. I feel that the deep rise bars are really the ticket and I campaigned for them since my first Fusion ride last Winter.

Weight: We did not have the ability to weigh a 2006 model at press time. RANS advertises the standard Fusion weight at 27.75 pounds. The 2006 weight reduction is due to a new CNC machined down tube.

COMPONENTS

Drivetrain: The Fusion's drivetrain offers a decent mix of dependable parts. Our Fusion came with 8-speed ESP 9.0 shifters mated with a manageable SRAM 5.0 derailleur. It shifts great, but looks cheap. I'm always



2006 "Deep Rise" handlebars



The Fusion seat; note reclined seat post



The RANS Fusion seat quick-release controls the angle of the seat base on the seat post

whining about the quality of lower end SRAM derailleurs, but admittedly, they shift great.

Gearing: The standard Fusion offers the Truvativ Firex 28/38/48 triple crank, which offers lower gearing than road racing triples

so prevalent on recumbents these days. Some in hilly territory may consider replacing the inside 28-tooth for an even smaller 24- or 26-tooth chainring.

Braking: The Tektro V-brakes are basic, trouble-free and offer excellent stopping ability. Your dealer can install Kool Stop pads which will improve braking.

Chain Management: Our Fusion was a 2005 and had a power side (upper) chain idler. In some gears this produces unwanted chatter. The 2006 model doesn't have a chain idler.

Wheels: The Fusion is outfitted with mountain bike 26" 559mm wheels with Deore hubs, front and rear. The wheels had to be retensioned after a few weeks of riding.

Tires: The tires are fast-rolling Primo Comet 1.5 100 psi tires. The Comets are affordable and perform well, though not the most robust for touring or commuting.

HOW TO BUY

Dealers/Direct: Fusions are sold through RANS dealers. Contact RANS to find a stocking dealer or to find out where to see a Fusion.

COMPARABLE MODELS

The Electra Townie 24 is \$470, the Giant Suede 21 is less expensive. K2 has four new CF models for 2006. The closest competitor for RANS is likely to be Cannondale with their new CF model with a Headshock fork. As one might expect, RANS stands alone in CF seat development.

EXTRAS

Our standard Fusion was outfitted with RANS optional fenders, a rack, and a kick stand — all are recommended options.

The Planet Bike Freddy fenders fit install easily and have adequate clearance. With the laid back head angle of the standard and Cruz models, the front fender's positioning is not optimum (fender not forward enough on the wheel). The only solution for this is custom fenders (wood fenders from Angletech). Mounting is fairly easy, but you have to be creative with the lower mount and you won't



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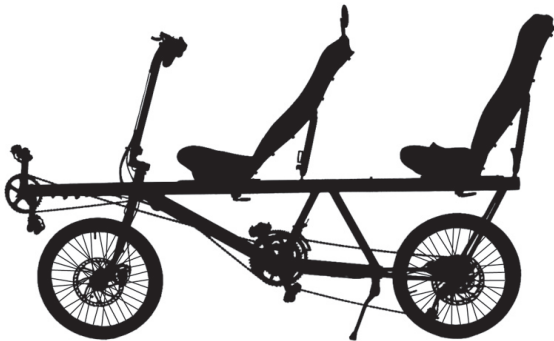
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encounter anything a few zip ties won't fix.

The rack works well, but for riders over about 5'9" the seat crosses over the front of the rack, which will make using a rack-top bag more difficult.

COMPANY

RANS has been in the bike business for nearly three decades.

VERDICT

RANS offers THE enthusiast line of crank forward bikes — so far nothing even comes close. While there are comfortable cruisers and many stylish, functional and affordable CF bikes, RANS is the only company pushing the limits of CF performance. The standard Fusion is NOT the performance Fusion model, but it's a fine all-rounder and will be the best for most people wanting to try CF bikes at the enthusiast level. I thought I'd want to stand on the pedals, but found it unnecessary. Even when riding the "standable" Dynamik, after some time on the bike I would just gear down and spin up hills. Thus my standard Fusion recommendation for most folks. Those interested in more aggressive or riding will find the Dynamik and Zenetik livelier and faster with more technical handling prowess.

There will be a downside to the Fusion for some. It's a unique position that places the rider farther behind the controls than other bikes and there isn't any vertical stem adjustment (though the new DEEP RISE bars are fairly tall). A few riders may experience some minor lower back pain while you're getting used to the bike (build up your tummy muscles according to RANS).

Some Fusion riders will feel that the seat foam is just too thin. Since I don't have an upholsterer or foam shop nearby, I wasn't able to try the additional foam under the seat that RANS suggests. The seat's firmness does get to me after a few hours, but it's still vastly more comfy than any regular upright bike because of the seat's wide base that supports the sit-bones. Lastly, Fusions are still rare in bike shops. While the the Electra Townie's and the like are in the \$350-\$500 range are becoming popular, the concept and market for an enthusiast crank forward bike level is new, and basically, depends on YOUR interest. While the Fusions are pricey for a crank-forward bike, the value and quality of the frame and components is better than any other recumbent we've seen in the under \$1200 price range.

RANS' Randy Schlitter is very passionate about his crank forward bikes. He's been working on them for years, and they improve with each generation. He's always pushing the envelope and trying out new things. Randy has become a visionary for all things recumbent — or crank forward. This is a unique, comfortable, and user-friendly bicycle that nearly every cyclist could utilize. The recumbent world is changing, the scope is widening and there are new levels of recumbency. Among them, the Fusion and crank forward bikes. They have probably already surpassed recumbents in sales (all makes and models) and are here to stay. ♦

FOR

- Can be lighter than a recumbent
- No learning curve
- Beautifully built in Hays, KS
- Good components
- No idler (2006 models)
- Flat-footed at stops

AGAINST

- Thin seat foam; minimal padding
- You can't stand on the pedals (Std. or Cruz)
- More recumbent than upright
- Gearing not low enough
- Cool, but delicate decals



2006 RANS Dynamik Duo tandem
Photo courtesy of RANS



2006 Zenetik 700 (Z-700) with new Deep Rise bars



2006 Dynamik

MORE INFO

Web: www.ransbikes.com

NUMBERS

Fits Riders: 5'1"-6'4"

Wheelbase: 53.75" (2.6" longer than Dynamik)

Seat height: Adjustable seat post

Weight: 27.75 lbs. (RANS)
Weight limit: 275
Gears: 24
Gear-Inch Range: 22.3-111.3 (25.5 wheel diameter)

BIKE

Frame: TIG Chromoly
Fork: Chromoly
Color: Yellow
Handlebar: RANS DEEP RISE (new for '06), black, logo (MTB style)
Stem/Riser: RANS top loader; one size
Seat: RANS Poly Spade
Sizes: One size fits riders 5'1"-6'4"

SPECS

Crankset: Truvativ Firex 28/34/48 170mm (later in the 2006 season change)
Bottom Bracket: ISIS Giga Pipe
Cassette: SRAM 11-32
Derailleur (front): Microshift
Derailleur (rear): SRAM ESP 5.0
Chain: KMC
Shifters: SRAM 9.0 twist
Headset: FSA 1-1/8"
Brakes/levers: Tektro V MT 4.0
Wheels: 26" 559mm
Hubs: Shimano Deore
Rims: Alex DA 16
Tires: Primo Comet 1.5
Pedals: Wellgo platform

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Amy Bryant on her Townie 24 ladies frame

RCN READER ROAD TEST:

The Electra Townie 24

By Amy Bryant

ABOUT THE BIKE

Manufacturer: Electra

Model/Year: 2005 Townie 24 ladies

Color: Suede Blue

Drivetrain: 24-speed (triple crank)

Gearing: 23-100 gear-inches

(Townie 7 gearing: 34-85 gear-inches,
Townie 8 gearing: 29-92 gear-inches)

Brakes: V-brakes

Tires: 65 psi Kenda cruiser-style; upgraded to Primo Comet 1.5 100 psi

Weight as Tested: Just over 34 pounds with accessories (Nexus 8 version weighs about the same)

Price: \$470 (Nexus 8 model: \$720)

INTRO (By RCN Ed.)

The Electra Townie 24 is a high quality, easy to ride and extremely comfortable crank forward/"flat footed technology"TM cruiser bicycle. Electra is a well known cruiser bicycle company. The Towie was designed by Jeano Erforth and Benno Baenziger and is promoted as the melding of the cruiser and recumbent bicycle designs. The biggest benefit of this comfortable bicycle is the low price, just \$470 retail.

Accessories installed: Townie frame bag

(hangs on top tube) and Townie fenders.

These are Planet Bike type with the plastic connectors (the kind my dad hates). So far mine haven't broken, but they are flimsy. My brother's Townie 7 and mom's Townie 8 both come with tougher metal fenders.

Time owned: 6 months

LIKES

The look is awesome. The matte finish suede blue paint is a cute look on the ladies frame. The best thing about this bike is the riding position: comfortable, relaxed, nice wide seat, and smooth over bumps. The wide gearing allows me to climb just about any hill easily, and much easier than our 7- and 8-speed internal hub gear Townies.

DISLIKES

After riding on my mom's 8-speed Townie I don't really feel the need to have the 24-speed; messing with the derailleur is no fun. Because of the derailleur the Townie 24 does not include a chain-guard, which would be nice to have.

Improvements made: The original tires are 65 psi Kenda cruiser-style tires, and are comfy, but slow. We installed Primo Comet

1.5 100 psi tires which made a big difference.

Problem areas experienced: Overall this is a great bike, though I've had a few problems with it. The Townie needed more care in set-up than most RCN test bikes.

My dad had to true the wheels and we checked the bottom bracket for tightness. Other than that, the V-brake springs occasionally need adjusting and sometimes the fender brackets slip. Since the photo was taken, we installed Planet Bike Freddy Fenders (as seen on the Fusion road test bike).

Do I think this bike is a good value? Yes.

COMFORT

How comfortable is this bike? I have no pain at all from this bike. The bike has an RT suspension fork, which my dad says is a bit soft, and he says it has adjustable dampening.

Seat back: The Townie doesn't have a seat back and doesn't really need one, but because there isn't one, your back doesn't have as much support as on a recumbent seat like my previous BikeE.

Seat base: This seat is one of the most comfortable seats I've ever used. The Townie seat has elastomer springs under it.

The seat base is wide, but because of the crank-forward design, it doesn't interfere with the pedaling.

Riding position: The Townie's riding position is like no other I've ridden. I first tried the Townie in Cannon Beach, OR on the beach and on the streets. With the flat-foot design, you never worry about falling off.

Do the seat back, seat base or riding position create any comfort related problems or concerns? No.

WHERE YOU RIDE

City/State: Port Townsend, WA

Type of riding: Recreation, transportation and fitness

My typical ride: I ride to the Port Townsend Farmer's Market and run errands in town every Saturday (10-12 miles round trip). I also ride to the beach, to friends' houses and to school a few times a week, and around the neighborhood. I ride mostly on city streets, bike lanes and trails. This bike can take me wherever I need to go, whether on the street or the trail. I've pulled a cargo trailer just fine.

Terrain: I ride my Townie over every type of terrain, from flats, rolling hills, smooth city streets, rough roads, single-track walking trails and gravel rail-trails.

THE RIDE

Was the bike easy to get accustomed to? The riding position is a bit different than I was accustomed to, but it didn't take long to get comfortable.

How does the bike perform? It performs

excellently, though speed is about average. I have no trouble keeping up with my friends on their mountain and comfort bikes. It's faster and easy to propel than my 20/16 CLWB, and a bit slower than my 700c hybrid.

How does the bike handle? The Townie is such a smooth riding bike. My last bike was a Kona aluminum hybrid that was so rough over bumps, it made your teeth chatter. The Townie tracks well and steers easily.

How does the bike climb hills? The Townie climbs slightly slower than I'm used to, because it is more difficult (but not impossible) to climb out of the saddle.

OVERALL

Do you like the bike? Do you plan to keep it? My Townie attracts lots of attention. I'm sure it's the only Blue Suede women's 24-speed in our town. People tell me all the time what a cool bike it is. I love this bike, and plan to keep it, but I have been riding my dad's single speed commuter a lot lately.

Would you recommend this bike to others? Yes, I do it all the time. It's got the looks, the ride and the reasonably affordable price. There is no reason for anyone to ride on a skinny-tired, stiff-handling, hard-seated mountain bike, when you could be comfortable and no slower than those mountain bikes.

Have you had any experience in dealing with your bikes builder? We ordered some accessories that never arrived (they misplaced the order), but other than that Electra has been wonderful to deal with.

Closing comments: I really think that they should offer an electric-assist version of this bike. I have people coming up to me all the time assuming it is an electric bike, because of the name, "Electra."

NOTE: Giant offers an electric-assist version of their Suede flat-footed cruiser and the Revive 20/20 CLWB recumbent — Ed.

MORE INFO: www.electrabike.com



Electra Nexus 7 with coast brake — the coolest looking Townie is flat grey and flat black, with black matching parts



The Electra Townie 8 ladies frame with basket, Marilyn's favorite



The Giant Suede



The Townie 24 mens is just \$470 retail

ABOUT THE AUTHOR

Name & age: Amy Bryant, 16

City & state: Port Townsend, WA

Job/Vocation: Student, artist, author, computer tech and dog-sitter

Pets: Jack Russell Terrier ("JR")

Hobbies: Writer (creative fiction, poetry, and bike reviews), reading, and riding bikes.

Favorite Authors: J.K. Rowling, Ann Rinaldi, Charles Dickens, Jane Austin.

Favorite TV show/movie(s): TV: None; Movies: Anything with Johnny Depp, Emmy Rossum, Gerard Butler or Keira Knightly.

Favorite Food(s): Pizza, teriyaki chicken domburi, salads, and anything chocolate

Favorite Music: Opera, Country, Bluegrass, Blues, Rock and Roll

Car(s) owned: I don't want one

Other/Previous bikes owned: BikeE CT, AT, Schwinn MTB, Trek 7200 Hybrid, and a Kona Dew Deluxe hybrid.

Possible next bike: A pink Vespa ; -) ♦

Submissions: We accept reviews written using this template. If you would like a copy of this, please send an email to bob@recumbentcyclistnews.com. We prefer that you write about a production recumbent or crank-forward bike, but a custom or well-loved and personalized recumbent is also acceptable. We require a color 300 dpi jpeg (approx. 4"x5" or minimum 8"x10" 72 dpi) of you and your bike. Upon printing, we will credit your subscription with three issues.



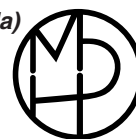
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Pondering the Townie

By Bob Bryant

Electra has been primarily a cruiser bicycle company based in southern California. Electra was founded in the early 1990s by two Germans, Jeano Erforth and Benno Baenziger. Their bikes are very hip and fashionable, inspired by the California lifestyle, hot-rod car and chopper motorcycle styles. Electra bikes have hip names like Rat Rod, Tiki, Straight 8, Suzy Q, Revil and Rally Sport. The "Rat Fink" pays homage to the late hot-rod designer and artist Big Daddy Ed Roth.

The Townie features their trademarked, "Flat Footed Technology™" which describes the lower seat so riders can have their feet flat on the ground at a stop. "By mixing the comfortable laid-back seating position of the odd, but fast recumbent with our smart and swoopy cruisers, we created the next generation of bikes, the Townies."

After renting a Townie in Cannon Beach, OR at Mike's Bikes during Spring break, I immediately came home and contacted Electra to see about getting a test bike or two. Electra was more than accommodating and we ordered three bikes: a standard 24-speed (Amy's test model), a matte flat black Nexus 7-speed with coaster brake (for me) and a ladies Nexus 8-speed in pearl white with a step-through frame for my wife. Within one week, son Daniel had commandeered the 7-speed as his own.

One perk of being the publisher of RCN is that we have lots of bikes around. My family has access to many weird and wonderful bikes. Some are very popular and get ridden a lot, and others don't. In the case of the Townies, they have been extremely popular. They command more attention around town than almost any other bike (this side of a recumbent trike). While many of our casual rider friends and neighbors feel recumbents are a bit over-the-top, we could have sold the Townies several times over.

The finish quality of the Townie frames is impeccable. The welding, paint and finish work is probably done by robots in Taiwan, but it's on par with the best of what we see here — and superior to other low-end recumbents. Electra builds these bikes on such a huge scale (compared to recumbents) that many parts are specially designed for each Townie model. The white and blue Townies had brushed-alloy finish on the bars and seat post, while the matte black 7-speed had flat black finish on the bars, seat post, crank etc. The bikes are real lookers — each one in its own right. The Townie has the most user-friendly, balanced all-around design, geometry and value of any crank forward bike. They just seem to have done it right.

We've had very little trouble with any of the Electras over the past several months. The bottom bracket (non-sealed) on the Nexus 8 bike came loose and had to be tightened. I adjusted the brakes on the 24-speed, and had to tighten the Nexus hub linkage on both the 7- and 8-speed. The wheels needed more attention than usual when the bikes were assembled, so be sure your selling dealer checks them.

According to Electra, the 24-speed is their best seller at \$470. I've ridden the 1- and 3-speed models which are incredible values at around \$300. Our 7-speed was \$570 and the 8-speed was \$700 — which explains why the 24-speed is the most popular. The Nexus bikes don't quite have a low enough low gear. Daniel and Marilyn need to plan their routes a bit better (no really steep hills). We plan to reduce the size of the chainring on the 8-speed this fall. Due to the gearing limitations, most RCN readers will be interested in the Townie 24-speed, which is the bike that Amy reviewed in this issue.

TOWNIE VS. FUSION

Frame Geometry: While the more enthusiast-oriented RANS Fusion is lighter and quicker, it is more recumbent than the Townie, which is more of a cruiser bicycle. This difference is immediately

detectable in the recline of the seat tube angle and the seat. Riders are in a more laid-back position on the Fusion. Being more laid back on a crank-forward bike doesn't always mean more comfortable. The RANS position is more aggressive and the seat is farther away from the handlebars, and the handlebars are lower (even with the tallest stem).

Seats: The Townie seat has more padding than the RANS, and the handlebars are taller (more comfy and a bit less performance). Finding the perfect adjustment on a CF will take just a minute. While I still prefer the RANS Fusion, but after riding both bikes, Amy and Marilyn preferred the high bars, more seat foam, and slightly less recumbent position (more upright seat tube) of the Townie.

The difference between the Fusion and the Townie comes down to how you will use the bike. If you're a casual rider, riding recreationally or around town or if you're on a budget, the Townie is THE bike. If you're looking for a lighter and faster crank-forward bike — the more enthusiast Fusion is the ticket.

CRANK FORWARD COMFORT

Recumbent critic that I am, I found the Townie's seat less comfy than our reviewers. It's a lightweight seat designed by Electra for the Townie. I thought the base could be larger and I didn't care for the high center ridge down the center of the seat. Nobody else even noticed this. Luckily, cruiser seats are readily available at your local bike shop or on the Internet, are relatively cheap and can be mounted in a few minutes. In contrast, the RANS Fusion seat is wider and flexes, but has minimal foam — which was a negative for some of our reviewers.

With their lower seats and semi-recumbent position, the crank-forward bikes eliminate all the neck and wrist pain that come with traditional upright cycling. The wider cushier saddles eliminate much of the bottom pain. However, these bikes add distance between the seat and handlebars (more with the Fusion than Townie). With the lack of recumbent back support, some riders feel minor lower back pain, and some don't (more so on the Fusion with the more reclined seat tube and lower handlebars). Cycling isn't usually 100% pain-free, so you have to make some compromises. According to RANS, this discomfort can go away once you build up your tummy muscles more, it depends on the person.

Some feel that this Townie-like comfort bike may eventually take over the entire comfort bike genre, which commands 15% of the bicycle market — this could mean sales in the millions of units. Recumbency has never seen anything close to these sales numbers. So can we afford to ignore this new half-bent style of bike?

My hat is off to the folks from Electra. The Townie is a brilliant design and is certain to be very popular. It's not just a poser bike, but we've proven that it can be a viable transportation, and a stylish one at that. They've become excellent sellers and many, builders are following suit with similar bikes. One thing is for certain, bicycle buyers in 2006 have more comfortable options than ever before. ♦

Are you interested in this trend and these bikes. Drop us a line and let us know: <bob@recumbencyclistnews.com>.

Note: If you think these bikes are just a flash in the pan, think again. Besides the countless manufacturers coming out with similar models, check out www.bikeforums.com, go to "Recreational & Family Cycling" and then look for the "Electra's New Townie" thread. I've been following this thread for months. There have been 245+ replies and 30,000+ views. This is incredible considering how buried this thread is at the website.

BIKE: Spider
BUILDER: Burley
ORIGIN: Eugene, OR
STYLE: LWB OSS
USE: Recreational
PRICE: \$1749

Burley is a household name in the bicycle business — primarily due to their robust bicycle trailers. They also have a line of durable and affordable upright tandems and trailer bike attachments. Several years ago Burley decided to get into recumbent bicycles. Burley's latest LWB series (Koosah/Jett Creek) has had some good sales successes which had Burley sit up and take notice. Their line of LWB recumbents has been increased significantly. The new Spider is both the replacement for their original recumbent, the Limbo, and also a suspension version of the popular Koosah/Jett Creek models.

USE/UTILITY

The Spider can be used for just about any use, but it's best suited as a recreational recumbent for casual and comfortable rides.

COMFORT

The Burley seat is of excellent quality, but has some nit-picky design details. The first one is the lace-up seat mesh. I would prefer adjustable buckles and straps — or even zip ties. Getting the seat mesh tight is tedious and you can't adjust the tension or shape of the seat back mesh through adjustment.

The seat back feels good, the mesh material is of good quality, and attractive. The seat has medium height back, with a slight lumbar curve.

The seat base is smallish and not the most comfortable I've experienced. Adjusting the seat base is also tedious (four nuts/bolts under the seat on a sliding track; difficult to access).

Despite what appears to be a wide adjustment range, there are only two positions that worked for me. The problem is that because Burley borrowed this seat from their higher bottom bracket recumbents, all of the adjustment positions are for an even more reclined back and angled downward seat base. When I set up a Burley LWB recumbent, I place the seat back in the most upright position, and place the seat base in the most rearward position with the seat base forward edge (nose) as high as possible.

The first position is has the seat back in the highest position, which feels good. Then when I set try to set the seat base level, I can't do it — all of the adjustment positions are for angled downward positions (seat designed for a high bottom bracket models). If you ride the bike with the seat base in this position, you can feel the back ridge of the seat base.



The Burley Spider

By Bob Bryant

"For a luxury cruiser, Burley's exclusive linkage suspension provides 5.5" of progressive rate suspension while still maintaining a low, 24" seat height. This translates to a great handling, super plush ride no matter how rough the road gets."

— Burley Catalog

You are high centering on this ridge — which takes away from the comfort. This also intensifies the feeling that the seat base is too far away from the seat back. Reclining the seat base one notch elevates the nose of the seat base, which is the best position possible for this seat base on this model. However, the seat back is now too reclined and it feels like the power is being sucked out of your stroke. The seat works best for those who prefer a laid back position. Burley's optional gel seat pad may help improve the seat base ridge/positioning issues, but it's heavy and not as comfy as it should be.

Burley's Chad Ash responded to our inquiry, "We are looking at a couple of different options for the seat and are planning to offer some sort of upgrade seat that should be available midseason '06. Your comments regarding the seat being better on the SWB was spot-on as that seat was designed for that bike (SWB or higher bottom bracket model) and not necessarily the LWB bikes."

FIT

The one-size frame fit all of the riders 5'4"-6' that we had here. At 6' tall, and 44.5" x-seam, I barely fit the bike.

RIDE

The ride and feel of the Spider is not of

a sporty LWB OSS recumbent, but of an relaxed comfortable cruiser. It's at its best at bike trail speeds or an easy commute. The Spider is not an aggressive performance machine, nor are the other Burley LWB models, but the hard-tail models are sportier and will perform better than the rear suspended Spider.

PERFORMANCE

I found the Spider to just be a moderate performer. On the flats, the weight and un-aerodynamic upright riding position are the culprits. On the hills, the suspensions' tendency to slightly bounce requires the rider to gear down to granny low, and spin up hills. The bike is not aggressive at all, it's a casual comfortable cruiser.

Climbing is also slow for the same reasons as above. The suspension also tends to rise and fall with each pedal stroke (pogo) more during climbs. Also, the gearing is too high and inadequate for this rather heavy bike.

FRAME

Frame/Fork: The frame and fork are beautifully made in Eugene, Oregon, by Burley. Both are Burley's Supalite CroMoly steel. The powdercoat finish looks great, as does the purple and black color combination. The only fabrication glitch is that Burley doesn't chase the threads (braze-ons) enough. We



The Spider's unique suspension system. Note seat base angle (most upright position)

found powdercoat in one of ours and we ended up cross-threading a bolt because of it (oops, I'm a dork).

Steering: The Spider utilizes the standard Burley stem/riser and tourist style bars. The bike steers fine, but it has more of a more of a DRIVING feel to it than a RIDING feel. We'd love to try some chopper style bars on a Burley recumbent.

Suspension: The Spider's progressive linkage suspension is a very unique system — I had never seen anything like it. The Spider's suspension offers a possible 5.5" of travel. The idea is that it takes 100% of your body weight in the shock pumped by a special shock pump (that doesn't come with the bike, and costs about \$40).

We had two test Spiders. The first was a 2005 model delivered in the Fall of 2005, and the second was a 2006 model delivered this past August. With our initial test Spider, the Cane Creek shock pogo'ed (suspension bounce) a lot. It got worse on hills, and was basically unacceptable for this XL sized rider. The 2006 Spider we rode in August 2005 had an updated Fox RP3 air/oil shock. This shock has a rebound adjustment knob as well as a ProPedal RP3 "on-the-fly" 3-position adjustment to refine the suspension feel. For me, this shock improved the ride and usefulness of this suspension immensely. However, it's still a soft suspension. You can feel it start rise and fall when you start spinning up hills, but the Fox shock is an excellent addition to the bike, and a must-have for any riders over near or over 200 pounds. However, with the shock set up for my XL-sized body, I certainly wasn't able to utilize the 5.5" of shock travel.

The Fox shock really improved the suspension and it's probably as good as it can be. Rear suspensions with high pivot points tend to bounce if not tamed properly with a good shock. However, low pivot points require a more complicated triangulated swing-arm and frame — which is impossible to do based on Burley's LWB design.

Weight: The Spider is a heavy bike, weighing in at #36 on our digital scale with platform pedals, and #39.5 pounds with a rack, fenders and pedals.

COMPONENTS

The components, Shimano hubs and Avid brakes are decent. The only real low point for 2006 is the KMC chain — I don't like their disposable quick links.

Crank: The Truvativ Rouleur crank is a wonder to behold. It's very attractive and unique — with it's Giga X Pipe external (bottom bracket) bearings. Unfortunately, this is just too much crank for this bike — the gearing is just too high.

Gearing: Unless you live in a very flat area, or don't climb hills, the Spider's gear range is too high (we found the same problem as the Jett Creek). My recommendation would be for Burley to spec a crank with lower gearing, such as the one that comes on the 2006 Koosah, a Truvativ Isoflow 28/38/48. While the Rouleur is a much fancier and beautiful crank — this bike DOESN'T need a road racing style triple on it.

My continuous rants about production recumbents have gearing that is too high is getting very tedious — but I refuse to back down. It's one thing if you live in Florida or Kansas and don't climb many hills, but if you climb hills daily and/or carry a load, you need a low gear in the teens (18-20 gear inches) and few aside from racers need a high gear of over 100 gear inches. My city bike has a high gear of 99 gear inches and I can pedal at almost 30 mph. *End of rant.*

Shifting: The Spider has a SRAM X.9 rear derailleur, SRAM cassette which is shifted by the X.7 twist shifters. Shifting was smooth and precise. X.7 are the lowest I prefer to go in the SRAM shifter line.

Braking: The Spider is outfitted with Avid 5 V-brakes and levers, and has mounts for disc brakes.

Chain Management: The Spider has Burley's trademark X-path chain idler system that works well — it's smooth and reasonably quiet, but does add friction to the system. A secondary idler is mounted just below the swing arm pivot at the rear suspension mount. A chain guide does rub against the chain in low gear (gear 1 and sometimes gear 2 on the cassette).

Wheels: The wheels have Shimano disc hubs (you can add disc brakes later), Weinmann Zac 19 rims and they are built up by Burley in Eugene, Oregon (not machine built overseas).

Tires: The Kwests are good all around tires — they are affordable, durable but they aren't the best performing tires. If you're interested in a bit more speed, I'd suggest a set of Primo Comets. However, if you are interested in a bit more speed, I'd recommend a different bike.

HOW TO BUY

Burley recumbents are sold through Burley dealers of which there are many. Finding one that is a recumbent expert, or even recumbent knowledgeable may be difficult. Purchasing a Burley recumbent mail-order is a bad idea as they require lots of set up. Have your selling dealer install the options (fenders, rack, etc) for you (see below).

COMPARABLE MODELS

Suspended LWB are rare, but there are a few models to choose from:

- **Cannondale (20"/16"):** The Cannondale is a high quality bike with an exceptional suspension. The Cannondale's mid-drive is unnecessary and makes for added chain noise, and annoying and constant TRIMMING of the mid (front) derailleur.
- **Burley Nasoke (26"/20"):** Same as the Spider but in a lower spec, and with a Cane Creek air shock (not recommended for those over about 180 pounds; we had bounce problems with this shock).

While not a suspension model, the RANS Stratus is one of the smoothest riding LWB recumbents made, and is a comparable. Dealers may still be able to get Sun EZ Riders as well (model on hiatus).

EXTRAS

Gel seat pad: Burley sent along their answer to seat base complaints, a gel pad that fits over the seat cushion (weighs #1.5). It mounts easily and is very nicely made, and adds softness to the Burley seat. However, it did not solve the seat base issues I have with the bike.

Fenders: Burley doesn't offer a fender kit for any of their recumbents, though Planet Bike or similar fenders can be fit. Fitting the

fenders required custom cutting many of the struts. The front fender was difficult to mount because the clearance between the crank arm and the front wheel is tight. Burley really needs to come out with a fender kit specifically for their LWB models.

Rear Rack: Burley offers a rear rack mounting kit, or a TerraCycles amidship rack should fit.

Seat bags: Burley offers two seat bags, the Compact Recumbent Bag (\$70) is the smaller of the two at 400 cubic inches and stretches across the center of the seat back; the Burley Seat bag (\$90) carries 670 cubic inches and caps over the seat back.

COMPANY

Burley's tandems and trailers are legendary, and their bicycle frames are built in Eugene, Oregon, which is rare these days, especially at such an affordable price point.

VERDICT

My feelings about the Burley LWB recumbent models are mixed. On one hand, I love the idea of recumbents built in Eugene, Oregon by an employee-owned co-op. The bikes have beautiful paint, the wheels that are built up in-house — and the clean look of the LWB low bottom bracket frame. However, the seat concerns listed in this review could be a real deal breaker for some riders, yet should be easy to correct (by Burley). All I'm asking for is to be able to adjust the seat base flat — a reasonable request. This won't affect any adjustment currently enjoyed by a Burley LWB rider, but will allow a wider adjustment range. It seems to me that a company like Burley could come up with a solution in a matter of hours, or at least a few weeks.

My advice is if this bike appeals to you, take the bike for a long test ride before you buy. Take some tools with you and make seat adjustments on the test ride to find an ergonomic position that works (seat back + seat base setting + stem recline + handlebar settings). If it works for you, the Spider is a fine quality LWB OSS full suspension recumbent — and an excellent value. We hope Burley will make the necessary modifications to the seat base to allow a full range of adjustments.

Burley LWB hard-tail passive suspension works great on the Koosah and Jet Creek, is far less complicated and more affordable. If you want a truly soft suspended *magic carpet* ride, the Spider's suspension is vastly improved with the new Fox shock. However, due to the high pivot suspension design, it still tends to bounce when you pedal hard or ride up a steep hill.

Burley is a fine company and all the people we deal with there are friendly and helpful. The quality of the frame and parts is very good and they seem very receptive to our constructive criticisms. We'd just like to see



them take the next step up in refine their bikes a bit more. And if you want a recumbent with a very active suspension, the Burley Spider should fit the bill. ♦

FOR

- Good build quality
- Excellent reputation
- Lots of dealers
- Built in the Oregon, USA

AGAINST

- Somewhat heavy
- Fenders difficult to fit
- Gearing too high
- Seat base positioning issues
- Not a fast bike

MORE INFO

Web: www.burley.com

NUMBERS

Fits Riders: 35"-45" x-seam
 Wheelbase: 64"
 Seat height: 26.5" (no rider)
 Crank height: 16.5"
 Seat angle: Adjustable
 Weight: #39.5 w/rack, fenders and pedals
 (approx. #36 w/pedals only)
 Weight limit: 275
 Gears: 27
 Gear Inch Range: 23.5-118

BIKE

Frame: Supalite 4130 Chromoly
 Fork: 4130 Chromoly
 Color: Lapis Illusion (midnight blue metallic)
 Handlebar: Burley OC bar
 Stem/Riser: Burley Megadjust alloy
 Seat: Alloy frame, foam base
 Size/s: One size

SPECS

Crankset: Truvativ Rouleur 30/42/52 170mm
 Bottom Bracket: Sealed cartridge
 Cassette: SRAM 11-32 9-spd.
 Derailleur (ft): Shimano



Note laced seat back and tourist bars



The Burley seat is not as refined as it should be. Note the smallish base.

Derailleur (rr): SRAM X.9
 Chain: KMC Z
 Shifters: SRAM X.7 twist
 Headsets: Aheadset threadless
 Brakes/levers: Avid SD5 V-brakes
 Wheel (ft): 26" 559mm
 Wheel (rr): 20" 406mm
 Hubs: Shimano Deore
 Rims: Weinmann ZAC 19
 Tires: Kenda Kwest 1.5 100 psi
 Pedals: Wellgo LU-A9

Burley's Classy Seat Bag

Article and photos by Tom Kepler
thomas.kepler@gmail.com



Although I have never ridden my Burley Koosah recumbent while wearing a tuxedo, if I ever did, I would feel completely comfortable dismounting from my recumbent, unsnapping my Burley seat bag, and taking the bag along with me without worrying about the Fashion Police. Made with 600 Denier-coated polyester, the sleek, black seat bag accented with a silver reflective stripe will hold 670 cubic inches of equipment, easily accessed with a single zipper.

This bag doesn't just look good, though; it is especially useful for the commuter who doesn't want to leave a bag outside on the bike while in the store doing business. Fastened to the recumbent with an elastic cap which slips over the top of the seat frame, the bag is disconnected from the bike in less than ten seconds by squeezing three plastic clips. Using either the loop handle or the attachable shoulder strap, you are off to the party, looking natty in your tux. Reconnecting the bag takes a little longer, but still in less than half a minute, you are on your way home.

Ease of use is the most noticeable attribute of the Burley seat bag. The bag comes with an elastic cap which slides over the first four inches of the squared top of the Burley seat back. The three squeeze clips are attached to the top, one on each side and one in the middle of the cap. These correspond to three male clip inserts sewn onto the bag's back, an easily useable connection. I regularly have to attend meetings at the university in my town, and I'm never nervous about being late because of stubborn clips or engineering. I carry my rain gear in the seat bag and remember the first time it began pouring rain as I was leaving a meeting. Like a kid with new galoshes in front of a mud puddle, I happily unzipped my Burley bag and reached for my rain gear.

In all fairness, there are some characteristics of the Burley seat bag which might be considered weaknesses. One is that the bag is structured as a single storage space. If you are one of those people who likes everything separated and in its own space, then you will have your frustrations with this bag. It has an inner mesh pocket attached to the back wall of the bag, but other than that the inner space is...well, just space. Another drawback to the bag (although this is probably typical of all larger recumbent seat bags) is that the company rep mentioned over the phone that if the seat is postured in its extreme recumbent position, the seat could drag on the back tire.

The Burley recumbent seat bag measured approximately 14" wide (lateral dimension across the seat back) with height and depth measurements of about 10". The suggested retail price is \$90, although I suggest that you check local dealer prices. I bought mine for less.

The Burley recumbent seat bag may fit other recumbents, but it's probably not a good idea unless your bike is available when you try to



fit the bag to the seat back.

Burley also manufactures a smaller seat bag made from the same material as the larger bag. It measures approximately 15" wide, 15" high, and about three inches deep, although the bag bells out when filled like a backpack. This bag is Burley specific. The bag does not use the elastic cap but a crosspiece of material connected to the seat back through eyelets in the fabric secured beneath screws factory-tapped for water bottle holders. Velcro strips on the bag's back adhere to the material screwed to the seat back, and Velcro straps also fasten to the seat's lateral support bar, a secure connection but one not as quickly released as the larger Burley bag. Burley's 2005 catalog mentions that this smaller bag is "great for hydro-packs." This smaller bag consists of one large pocket compartment topped by a smaller pocket for necessities like wallet and cell phone, a plus for riders who like to keep their stuff sorted out. The bag's suggested price is \$70.

The 670-cubic inch Burley recumbent seat bag is a classy-looking useful accessory for your bike. Easily and quickly attached and removed from the bike, it provides a safe storage space for your necessities. As a commuter, it provides a friendly place for my rain gear. Used as a day bag, it easily holds rain gear, lunch, and extras such as suntan lotion and bike tools. On the self-contained overnighter, the Burley 670 cubic inch seat bag will hold rain gear, bike tools and tubes, toiletries, and probably more. I don't feel bad about riding my recumbent without a tux, but I would definitely regret not owning this seat bag. The Burley recumbent seat bag has proven itself to be a useful addition to my bicycling life. ♦

Contact: Burley Design Cooperative, www.burley.com.

Bicycle Miles Per Gallon

By Chet Rideout

With the cost of gas hovering around three dollars a gallon and rising, and with no recent improvements in automobile efficiency, it's easy to feel like we're trapped between a rock and a hard place. We hear that world peak oil production is behind us, that we're eventually going to run flat out of the black stuff, and that there's no light at the end of the tunnel. Our government not only has made no preparations for this future calamity, it has not even admitted there is a crisis!

The average American car gets 21 miles per gallon, while the first automobiles got 25 miles per gallon. What happened to progress here? Just like \$100 ink jet printers that require two \$25 ink cartridges, the gasoline – rather than the automobile – is really the big sale. Let's face it: an efficient car just wouldn't suck down gas quickly enough to make the oil companies happy. (Americans want Hummers, not Smart cars, thank you!). What can we do?

Bicycle transportation is the answer! I know it's not the American way. In this country bicycles are exercise toys for weekends; not, God forbid, a means of transportation. I think this is likely to start changing in the near future, maybe even before a gallon of gas costs five dollars. I would like to advocate more practical uses for our bicycles.

How much more efficient are bicycles than cars? Recently I read up on the subject to find out. I found that a gallon of gas has 31,200 Calories. (That's Calories with a capital C because food calories are really kilocalories, or the heat needed to heat a kilogram of water one degree centigrade.) One study indicated that this amount of food energy would provide a cyclist with enough energy to ride 912 miles at 15 miles per hour; others claim 1,100, or even 1,500. It has been further estimated that a Tour de France rider could travel 300 miles (approximately three race stages) on the same energy; the reduction in efficiency is due to the added speed and the resulting wind resistance, which greatly increases energy consumption.

I have a video of the Tandem ride across America performed by Pete Penseyres and Lon Haldeman in 1987. This ride was analyzed physiologically and psychologically, and the riders were powered almost entirely by Ultra Energy liquid diet. Since they rode 21 hours at day and slept the remaining three, you could safely say that all the energy they consumed went into propelling themselves down the road. Pete took in 8,170 calories per day, while the larger Lon consumed 11,300. They crossed from Los Angeles to Atlantic City New Jersey in only seven days and 14 hours, averaging 400 miles per day. Since the two of them consumed 19,470 calories daily, this worked out to 643 miles per gallon to ride their tandem at world record pace. Another way to look at this is that 30.6 tandem teams could cross the country with the same energy consumption as one car (you might have to clone these guys, though)!

I've heard it argued that the bicycle isn't practical, since you can't carry anything on it. This is patently false, as the Vietnamese and Chinese show daily by using the bicycle to transport amazing amounts of goods. In Colorado I towed a canoe to a lake 10 miles away and back two times, and had a healthy paddle in between. I've used panniers and a trailer to take home 75 or more pounds of groceries 10 miles each way on numerous occasions, and I hardly raised a sweat. But what happens to efficiency with a load?

To illustrate this, let's compare the efficiency of a couple of everyday bicycle tourists, namely Piero Tassinari (my Italian cycling buddy) and me. On our ride from Jasper, Alberta to Grand Teton Park (RCN, July/August 2001) we averaged 50 miles per day on recumbents, pulling 16-pound trailers each carrying about 35 pounds of camping gear. Piero is lighter than I am, so we'll just figure averages. Also, we didn't count our calories, so we'll have to guesstimate. The average person in the U.S. consumes 3,600 calories per day (perhaps 1,000 calories

too many?). We consume more during a tour, however, so I would say we took in about 4,500 calories per day. Of this total, I would estimate that two-thirds, or 3,000 calories, were consumed during the five hours of cycling we did each day, with the rest providing energy for after-biking activities. This averages about 60 calories per mile, or 520 miles per gallon. This means that almost 25 of us could ride with these loads to equal the energy expenditure of one car. Another way of looking at this is that each of us consumed energy equivalent of 2.35 gallons of gasoline during the entire 1,220 mile trip. Not bad, eh? When you are the only person in the car on an errand, how often do you haul more than a 35-pound load with you in the car? Furthermore, you need to eat even at rest. All that is required to use a bicycle for transportation is that you increase your food intake somewhat.

It is widely known that bicycles are the most efficient means of transportation, but in this country we seldom really use our bicycles in a practical way. If you are finding that your gas-guzzler is taking too large a chunk of your income, leave it in the driveway more often. Put your bicycle to work; mount a rack on it and add panniers, or buy one of the lightweight trailers that are available nowadays. Can't afford the purchase? Sell the second car! Take advantage of the tremendous advantage bicycles pose to ride to work, shop for groceries, or make a trip downtown. You will save on your pocketbook and improve your health and fitness at the same time. ♦

BICYCLES AS TRANSPORTATION LINKS

www.burley.com/products/trailer

www.quik-pak.com/

www.bikesatwork.com

HUMAN MPG

www.auto.howstuffworks.com/question527.htm

www.verinet.com/~pedal/900-2.htm

Smart Car: www.usa.smart.com

SIDEBAR: BIKE-TRANSPORTATION

By Bob Bryant

Utility cycling is not a hip or even popular side of bicycling (yet!) — but this should change. At three bucks a gallon, people might sit up and take notice of the meek and mild commuter bicycle. The other change that I'd like to see is the way that bicycles are sold and marketed. I'm dreaming of a high quality, durable, simple and affordable recumbent commuter bicycle.

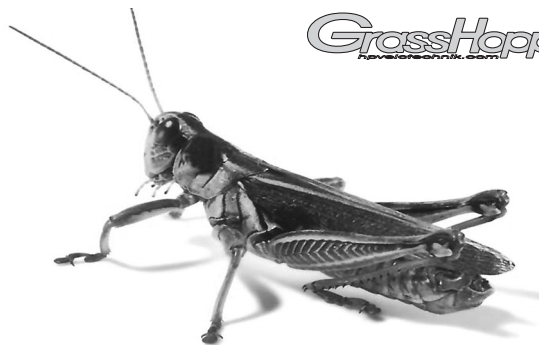
Very few bicycles are sold as tools for transportation. Every bicycle sold for on-street use should come outfitted with:

- Rack
- Fenders (custom fit for the bike; no junky cheapies)
- Bell (high quality)
- LED lights

Here are some other dream features, or a wish list:

- Briefcase-size hard case
- Fast, yet durable tires, perhaps 1.5 or 1.75
- Integrated frame lock (Euro-style a la Breezer)
- Tool kit with high quality pump
- Extra parts kit (spare idler, tubes, spokes, etc.)
- Computer option (high quality and installed)

GrassHopper
hpvelotechnik.com



GrassHopper [gras'hoppe] *lat. lucustæ*
weight: fully suspended specimen from 30.9 lbs / biosphere: country lanes, dirt roads, outdoor cafés / its occurrence indicates a healthy environment / profile: compact, luxurious, fast, carries up to 8.6 times its weight / skeleton: stiff full suspension aluminum frame / support: BodyLink® seat with ergonomically shaped seat base, length adjustable back rest and flexible joint for maximum lumbar support / colors: dormant apple green, steel blue, carmine red and custom colors / observation: first appearance in spring 2004, available worldwide from recumbent dealers now.



GrassHopper ASS



GrassHopper USS

HP
Velotechnik

HP Velotechnik recumbents • Kriftel • Germany • mail@hpvelotechnik.com
Please visit www.hpvelotechnik.com for details and a list of our US dealers

In some European countries where bicycles are more viewed as transportation and not just recreational toys, some of this equipment is standard. HP Velotechnik (RCN advertiser) is a good example. Even some of the raciest designs have rack and fender options.

Sadly, there are exactly ZERO recumbents sold as transportation bikes or commuters. Hopefully this will change. In contrast, there are many upright commuter offerings these days. While many recumbents can be outfitted for transportation, tracking down good quality parts (from the above list) that work well and are durable can be difficult.

Gearing should be a lower range, say a 22/34/44 MTB-style crankset combined with an 11-32 cassette making for a very useable 17-100 gear-inch range (the 17 will be good for low speed climbing towing a trailer with groceries, and the 100 will be good to pedal up to 30 mph). A wide range 7/8 speed internal or derailleur model would work fine for some riders who don't ride up steep hills.

This bike should have a 20/20 26/20 wheel combo to keep the length reasonable, and make it fairly tall. An upright seating position for a good view of the road and traffic would be ideal. Something along the lines of the old RANS Nimbus (a taller and shorter Stratus-like LWB) would be ideal. (I loved the Nimbus.) A low bottom bracket is a must for practical commuters in street clothes (and those not using clipless pedals). A chain guard would also be useful.

So you see we have a lot of work cut out for us. As bicycle riders, we can start using our bikes as transportation — not just as recreational toys. Hopefully the manufacturers will provide some ready-to-ride commuter recumbents. Lets not let this opportunity slip by. ♦

- Transportation Bicycles (uprights)
- ANT: www.antbikemike.com
- Bianchi (Castro Valley, Milano & Rollo): www.bianchiusa.com
- Breezer: www.breezerbikes.com
- Brompton: www.bromptonbicycle.co.uk
- Koga-Miyata: www.kogausa.com
- Novara (Fusion): www.rei.com
- Specialized (Globe): www.specialized.com
- Trek (T200/300/400): www.trekbike.com

General commuter bicycle website: www.nordicgroup.us/commutebike/

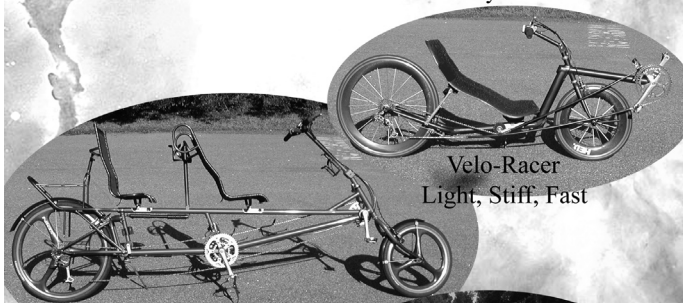
This isn't meant to get you to buy an upright bike, but to demonstrate what is possible and current in transportation bicycles.

Note: If you have a commuter recumbent, or story about using your bicycle as transportation, please write to us: bob@recumbencyclistnews.com.

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12th Annual Midwest Recumbent Rally

By Mike Stern

Recumbent enthusiasts from all over converged on August 12-14, 2005 in Stevens Point, WI, for the 12th Annual Midwest Recumbent Rally, hosted by Hostel Shoppe. This year 350 people attended, well above last year's tally of around 300. The event, organized by Rolf and Barb Garthus, principals of the Hostel Shoppe, and provided free of charge to participants, provided the same routes and same meeting points as last year. Friday afternoon was an Ice Cream social ride of about 20 miles. On Saturday morning riders could do a 22- or 39-mile route, and Sunday morning ride offerings varied from 12 up to 60 miles. Maps were also available for independent rides. And the Gods shined on this year's participants as day after day the experts forecasted rain almost everywhere in the Midwest except for the Rally location. Mornings broke in the high 50's rising to the high 70's during the day under beautiful blue skies.

The most talked-about subject was the presence of a writer for *Bicycling* magazine. In the past this publication has largely ignored recumbency. While it was being debated whether Rolf and Barb asked the writer to attend or whether the magazine sent the writer, the important point was that he was there. Rolf loaned him his multi-hued Volae Team and couldn't get the bike back. A new Volae Expedition (Volae's new touring model) is being shipped to *Bicycling* for testing.

With 350 riders you would expect a large variety of bikes, and there were. Noticeably on the increase this year were the trikes: Catrike, WizWheelz and Greenspeed tadpoles, and Hase and Sun deltas. Tandems were also well accounted for: Screammers, Visions, and an M5, together with a Greenspeed tandem and an Organic Engines Troika. The number of sponsors was up this year too. In addition to Volae, Pat Franz of Terracycle, Jerome Hediger of Greenspeed/Hediger Cycles, and representatives from Schwalbe tires, WizWheelz and from the Europe in Your Backyard tours were on hand to answer question and provide test rides.

Highracers were in plentiful supply among participants. It appeared that the Volaes outnumbered the Bacchettas, which was the opposite of last year. RANS Force 5, were also seen. Among the LWB entries, Tour Easys were plentiful. One of the bikes that got a lot of attention was a bright yellow Longbikes Slipstream. A newbie from Minnesota flew down to the Rally for the purpose of buying a recumbent. He tried the highracers and handled them very well, but when he sat on the Longbikes, as he said, "I was home." And there were at least seven Haluzaks spotted. For a SWB underseat steering bike they performed very well. One was decked out in a small fairing and a bodysock. But the one that got the most interest was a homebuilt all wood-framed recumbent. Whoever said recumbents were boring?

The routes were all well paved. Wisconsin, at least in the area of Stevens Point, seems to have well-maintained roads with little traffic. You could ride for 20 minutes before seeing a car. And the routes went through the lush green forests of the area. Each day's rides were somewhat hillier than the previous day, but nothing that was beyond the ability of all riders to handle.

An experimental Volae Sport with a RANS steering stem was also available for test rides. Volae is at least experimenting with this modification for those who want a highracer but feel uncomfortable with *tweener* bars. The modified arrangement brought the bars a little closer to the body than the normal *begging hamster* steering. The bars were a little higher, both due to the higher bottom bracket to seat height of the highracers, but there was no noticeable tiller steering or fork flop. The bike rode smoothly, was very responsive, and was easier to start and stop due the absence of the possibility of bar/knee interference. Erich Hartman was responsible for the experimental bike and the effort he put into it really showed. I would expect to hear

more about this in the future.

At the conclusion of the three days most people were reluctant to leave. More than a ride, or a rally, this event has become a happening, a place to join up with other recumbent riders, to share good times and laughs, to exchange knowledge about bikes, to see what others are doing, and to just chill out and have fun. Parting comments weren't "so long" as much as they were "see you next year." Year in and year out, this is a great recumbent event.

For more information on the rally, visit: www.hostelshoppe.com/recumbent_rally.php ♦

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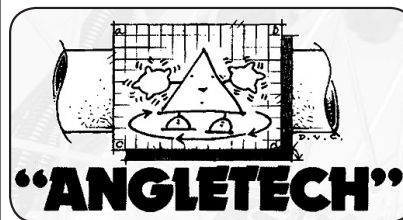
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- Lightfoot: <www.lightfootcycles.com>
- RANS Fusion: <www.ransbikes.com>

Sun, Del Sol and Trek also have 1-, 3- and 7-speed models, which don't offer wide range gearing, so we're not covering them in this article. Sun also has the new 26"/20" SunRay that has a cruiser seat with a back rest.

Most crank-forward bikes have full size wheels (26") and most don't have back rests.

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design is that designers can make the seat wider, offering full sit-bone support. The lack of skinny seat soft-tissue pressure makes CF seats much more comfortable. With the CF's semi-recumbent riding position, there isn't much interference between the rider's thighs and the seat like there would be on an upright bike with a wide seat. Our Townie and Fusion seats are very light, and both are proprietary designs. Some riders may find the mainstream CF seats are not as comfy as they should be.

For these riders, aftermarket sprung or gel cruiser saddles are readily available (they will be unnecessary on the RANS seat; and also won't fit due to the custom RANS seatpost.

Back Rests: Because you are leaning slightly forward, back rests are not necessary on a CF bike. With the upright/erect riding position, you just don't push into the seat back, although a lip is good to keep you from sliding off the seat. The RANS Fusion seat has a seat back a few inches tall that does allow you to push into it somewhat.

PERFORMANCE

The cruiser style mainstream CF bikes are recreational bikes. However, their performance is on par with most entry level sub-\$1000 recumbents (some may require a tire upgrade, we added Primo Comet 100 psi 1.5" tires to our test Townies). The enthusiast Fusion has the ability to be a very fast bike with light weights, paired spoke wheels and more aero position (than an upright). I still don't think this will make them faster than a road

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bike, or fast recumbent.

CF climbing is a big question mark. Electra claims you can get more torque. The RANS technique requires pulling into the bars to generate power. I ride up lots of hills and found CFs hill climbing to be good, but not great. I tried the pull into the bars technique and found it uncomfortable. I tried the "standable" (stand on the pedals) Fusion Dynamik and "non-standable" Fusion and found that standing on the pedals on a CF was quite a chore (difficult to stand and rotate your body forward and clear the handlebars). After months of riding, I just adapted my recumbent climbing technique: gear down and spin. Which leads to another issue — low enough gearing to climb.

You might think that I'm a recumbent climbing weenie, but that's not the case. I climb hills daily, and also ride a 1-speed city bike which you must stand to climb.

CASE AGAINST RECUMBENTS

For decades recumbent designers have been driving the bike industry crazy with their non-standard designs that vary all over the map. Non-specialist dealers just can't be expected to learn all there is to know about recumbents and shop employees seldom have enough knowledge to successfully sell recumbents. Recumbents have always carried a stigma as being a bit odd and requiring a learning curve (on many levels). (After 15 years I've become accused of the silent pause after I tell industry people the name of our magazine.) Even more difficult to get past is the lack of standardized information for selecting a recumbent. Additionally, recumbents are more expensive, more complex, and more difficult to work on — but we love them anyway.

The CF bike solves many of these concerns by MAINSTREAMING the recumbent design into easily recognizable and understandable concepts. For the most part, the crank forward bikes are recreational cruisers. While researching this article, I got the distinct impression that the mainstream industry sees the CF as the future of the comfort bike. They will be primarily purchased by new or returning cyclists who probably won't know or care of the semi-recumbent heritage of the bike they are riding.

FUTURE OF RECUMBENCY

My biggest concern for the future of recumbency is the cost of the bikes. Currently 18 million bikes are sold in the US, at an average cost of \$300. The problem is that the recumbent industry has nothing to offer customers at the \$400 price point where comfort bikes, cruisers and mountain bikes have a stronghold. CF bikes fit nicely into the bike shops bread and butter price range. (It's also worthy to note that recumbents are still about

twice as expensive as a comparable upright.)

Recumbent sales are less than 1% of bicycles sold. Cruiser bikes have nearly 4% and comfort bikes 15%. The only expensive bike to command a good portion of the bike market is the road bike, at 10% of the market and an average price of about \$1,100.

So while recumbent growth stagnates at < 1% of the bike market (25-50,000 units), the market for crank forward bikes could be hundreds of thousands, possibly millions of bikes sold. One mainstream builder told me that these bikes WILL replace their current comfort bike line. The potential market is huge.

CF: THE BIKES WITH NO NAME

Mainstream manufactures use descriptive terms that discuss the relaxed position and ability to put your feet flat on the ground, like Electra's "Flat-Foot Technology™", though interestingly their really is no official name for these bikes (yet). For this article, we're using Crank Forward, though we doubt the industry will start using this term (RANS' Randy Schlitter uses Crank Forward to define the Fusions. A host of other odd terms and descriptive phrases are used. Who knows which will name will stick, EZB, EZ bike, Laid Back or just plain old comfort bike.

SUMMARY

CF's make the ultimate commuters, recreational bikes and even starter recumbents. If you need proof, take a look at the dozens of Austin, Texas residents who were given Electra Townies to participate in *Bicycling Magazine's* Biketown USA <www.bicycling.com>.

In contrast, recumbents offer real comfort for very long rides, tours and longer commutes, though they are probably not as good for short or urban commutes. Recumbents have the ability to go faster, and more back support and usually more comfort.

CF's are ideal for casual commuting and recreational rides of up to a dozen miles (more with a Fusion) and they offer immediate comfort. The CF bikes truly do meld the best of the recumbent and the upright. In fact, it's possible that CF bikes could become the entry level recumbent. CF bikes could coexist with recumbents as just another comfortable bicycle option for new riders — a semi-recumbent for the masses, but just don't mention the word "recumbent." ♦

Note: We're interested to hear whether these types of bikes interest you. Future CF coverage will depend on RCN READER response to this article. Please take the time to let us know how you feel about the CF bikes. We'll base our decision on just how much to cover them on the feedback we get from this article, email me directly at: bob@recumbentcyclistnews.com

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POD VELOMOBILE

As you may know, the original Pod velomobile that was started in Santa Cruz County in 2004 failed. You asked me to keep you informed, but I forgot. Sorry about being late to respond!

I added a full fairing in the meantime (summer '04) to a TerraTrike. When the Pod failed, I had "part of" a velomobile already, so it had to do as an alternative Pod. I have a pedal-assist on it, which helps on inclines, but it is now considerably faster, so I often easily overpower the motor's top speed and turn the motor off.

The fairing is composed of Mylar (aluminum foil/fiberglass "sandwich") mounted to a Zipper fairing, two Chromoly tubes formed in a "T" and an upside down "U" roll bar and two large panniers.

The insulation is outstanding: it reflects the hot sun off, and that inner fiberglass adds to keeping the inside cool. It had a floorboard, but I wanted an easy reverse with my feet. Santa Cruz is not well known for snow, and I like air flowing through the floor and windows. I never put it back on.

The crank size problem was an easy fix with crank-arm shorteners (from 170mm to 150mm; I think), but doing without the floorboard solved the space problem completely.

The wheels touch the Mylar, especially when turning, but it has a soft "whir" that turns into a high "eeeeee...." at different pitches (at different speeds). I have a small stereo tape/radio, and the sounds combine (the Currie motor, the music- like a concert hall in there-, and the soft wheel-whirr). These audio distractions do not bother me at all.

My neighbor is convinced it is a spaceship. Tourists have descriptions of everything from an oversized rolling Thermos to an escapee from Reynolds Aluminum!

I rolled it twice due to the motor — not me, of course — and ran into a big light pole, but aside from being an elderly TerraTrike, this vehicle is keeping right up to "today's transportation". I did receive the original Pod base trike (an EZ-3 tadpole), so I have the best of both trike worlds: enclosed or convertible!

Chris Jordan
chrisj@sasquatch.com

RCN 15TH ANNIVERSARY

What a great magazine to come home to! My RCN 089 arrived a couple of days after I returned home to Plantation, FL from my stem cell transplant treatment in Tampa. I devoured the issue (well, not literally - I'm not that hungry!), and I especially enjoyed the letters in support of RCN from recumbent luminaries such as Zach, Mark, John R, Randy, John S, Kent, Paulo, Kelvin, and "Wo". I've met and ridden with many of these fine people, and read stories and articles by others, and it's a testament to the world of recumbents how many high-quality people share our love for this sport.

I've been riding recumbents since 1996, and the 1995 RCN Buyer's Guide was instrumental in helping me choose my first fast 'bent, a Vision R-45. Since then, it's been a primary source of inspiration and much needed information, and I've saved every issue I received. I consider it an honor to have been published in RCN as well.

Keep up the wonderful and necessary work you're doing, and tell your family ("the staff") that their efforts are greatly appreciated by those of us who love RCN.

Shari Bernhard
shari.bernhard@gmail.com

Editor's Comments: Many RCN readers will recognize Shari's name from previous RCN articles, etc. We wish Shari a speedy recovery.

RANS FACTORY TOUR

I passed through Hays, KS recently and stopped at the RANS factory. RANS' Randy Schlitter graciously gave me a tour. The facility consists of three buildings in a "U" shape. There are two large metal production buildings that are joined out front by an office building. Needless to say, there are lots of machines for cutting, shaping, bending and joining various metal bits. Some of these are of Randy's own design. As you can see from their website, RANS make a variety of airplanes, both in kit, and now in complete form. A variety of different technologies are used on the different planes, including different types of wing and fuselage coverings. The bikes are blended into the whole operation, since some parts of the production process, like welding, are the same. Instructions about stopping for a tour are on the RANS

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website. I recommend it. Thanks again, Randy, for the tour.

John Riley

CUSTOM BACCHETTA AERO

I recently purchased a Bacchetta Aero customized by Zach Kaplan Cycles (M5 seat, titanium rotor cranks, Shimano 600 brake in rear, and a bit of altered ... extended... gearing... with Shimano bar end shifters). Here is my opinion of this bike so far:

Positive: Exceptionally comfortable seat for long rides (100+ miles). Noticeably better than that of the already legendary comfortable RANS and Gold Rush seats. Phenomenal hill-climbing performance. I was 50% to 100% faster climbing hills EVEN though in this test I was more out of shape than I was most of the time riding my Gold Rush, due probably to the lighter weight of the bike, and perhaps to the effect of the Rotor crank. And all this despite a more open pedal angle than on the Gold Rush, which in theory might have made climbing more difficult for me. Very aerodynamic, though not as much so as a faired and body-socked Gold Rush or V2.

I and many of my riding friends find the bike to be truly elegant in appearance. Not "geeky", the way some of the LWB bikes with fairings and body stockings appear to many upright riders. The bike fits in well in a crowd of upright cyclists. The bike drew MANY compliments on how beautiful and elegant the bike appeared.

Excellent stability at very low speeds, compared to the instability of a long wheelbase (LWB) bike (Gold Rush) at under 3.5 mph. In this respect, the Aero handles more like an upright bike, stable down towards as low as 2.5 mph or less. Significantly easier to transport than a faired LWB bike.

Negative: I would have liked the option to use discs or even V-brakes. The side-pull brakes provided dramatically weaker stopping power, when compared with the Gold Rush with V-brakes that I am accustomed to riding. I'm in the process of having Zach Kaplan install a Giro front fork and build up a new front wheel for me, and add a disc brake to the front (using Avid mechanical disk brakes, which can use the same levers I already have). Another approach might involve using V-brakes. This might result in lower overall weight. I just decided to go all out with a disc brake, for more reliable and safe stopping in rain or when brakes need be applied repeatedly during a descent.

In theory, better side-pull brakes might improve braking. I hear there is a set available at the \$400 price level, but since they require 571 mm wheels, they will not work with the 559mm wheels I am using. Note that the Bacchetta poses some problems for upgrading its side-pull brakes because its front brake has to be made in a mirror image (pull on

other side) from most side-pull brakes. One CAN mount the brake in back of the fork, not in front, but this poses other problems.

The ride is slightly stiffer than on my Gold Rush, but not unpleasantly so, even for a 100-mile ride. This bike does not quite have that "rock of Gibraltar" solid, steady feel at very high (45 to 55 mph) speeds that I get with a Gold Rush with fatter tires. There's really nothing quite like a Gold Rush (or similar LWB bike) for feeling really, really stable going down a hill at 55 mph. But then, doing that is a bit dangerous, it doesn't happen that often, and the Aero IS quite competent-feeling at moderately high (30 to 45 mph) speeds. The Gold Rush at high speed tends to WANT, by virtue of its design, to track straight ahead in a very stable fashion, whereas the Aero is designed for more precise handling, and requires some (not too much) steering input in those situations.

It's noticeably more awkward to start up this bike after stopping in traffic compared to with my Gold Rush. I would think this is a problem with all short wheelbase (SWB) bikes, especially those, like the Aero, that have relatively high bottom brackets.

Some may not be able to ride the Aero because of SWB numb-foot, a situation where one's feet get numb or even pained after riding for 15, 30 or 50 miles (and/or upon doing higher power pedaling, as in climbing or racing). I was fortunate in that this did not seem to afflict me, or affected me only briefly during maximum climbing efforts.

Overall, this is truly an OUTSTANDING bike. I was surprised by how rapidly I fell in love with it, given that I'd been a contented rider of a Gold Rush for the last six or so years, and had little experience on a short wheelbase design. This seems likely to become my primary recreational road riding bike in this period. I noticed that while last year there were just a few Bacchetta SWBs on the Seattle to Portland ride (8,000 riders, 50 to 150 recumbents) and very many Easy Racer LWBs, this year there were as many or more Bacchettas as there were Easy Racers. As with ANY recumbent design, it's not perfect, and can be improved by some degree of customization.

Martin H. Goodman, MD

HIGHRACER TOUR

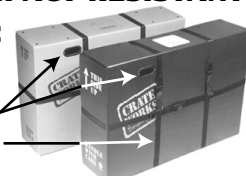
Here's a data point you might be interested in with regard to the cross-country capabilities of a highracer. I just finished a one-way, unsupported tour from Kalamazoo to St. Louis on my Volae Club. The 470-mile trip took 3.5 days over a three-day holiday weekend. A good friend came with me for the first two days, riding his Ryan Vanguard, but I finished solo. We were lightly loaded for sure, just carrying some food, water, and clothing in addition to the usual tools, spares

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and emergency supplies. We stayed in hotels along the way. I had a good deal of unused capacity in my Radical Designs side bags.

I was worried that my skinny 650c wheels would be the weak link on this trip, and at the beginning it looked like I was right. I got two flat tires before lunch on the first day,

but had no more the rest of the way. Early on day three a spoke broke on the non-drive side of my rear wheel. The Velocity Spartacus wheel barely showed any effect, which was fortunate, since I saw no bike shops along the way, and they probably would have been closed for the holiday anyway. I just rode the last 185 miles with 19 spokes instead of 20.

Overall the bike performed very well. The route was not very challenging, mostly through wide, flat Illinois prairie. We rode on smoothly paved roads, and the weather was great. Headwinds were tough the first two days, and I think my setup helped me slip through with relative ease. I had no discomfort on the seat for 10-12 hours/day, and no problem maintaining a moving average speed of about 14 mph. Congratulations on your 15th Anniversary; Keep up the good work!

Paul V. Pancella



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RECUMBENT FAIRINGS

There are a number of pros and cons as to whether one should invest the kind of money it takes to install a fairing on your bike. There is really no reason to get one unless you consistently ride well over 15 mph, as they have little effect under that speed (unless you are interested in partial wind/weather protection). I have a fairing on my old BikeE and it helps keep me warm on frigid days riding in Chicago. I have a full fairing on my Gold Rush and have found cross-winds to have very little effect because the fairing is on a pretty steep slant and is close to the bike with little "scoop." The biggest issue has to do with how reclined you are on your bike. If you are really laid back, there is very little need for a fairing. The more upright you're seated, the more positive effect a fairing will have.

Jim Gross

KIDS BENTS

Douglas Collins was asking in RCN 088 for details of anyone making 'bents for kids. Well in addition to the leads you mentioned in reply, there's a long list of links at:

<www.mnhpva.org/Mini_Bents/Mini.html>

Mark Farrington

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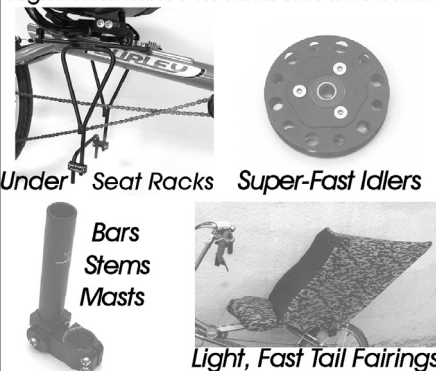
In a recent RCN, a reader was looking for a long wire computer for a LWB. The Quality Bicycle Parts catalog lists the Topeak Panoram long wire, a computer. This can be ordered through aebike.com for \$32, or through your bike shop.

Thanks to Jim Bolton for this tip. ♦



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Short Cranks: Slicker, Quicker & Easier

By Thad Sitton, sitton_1@grandecom.net

Recumbents vary greatly in length, steering, and riding position, and as RCN'S Bob Bryant likes to say, different bikes and their components don't fit "every *body*" the same way. However, there may be exceptions, and my recent experience suggests that most recumbent riders would benefit from shorter cranks. By that I mean cranks of 140-155mm, rather than the standard 170-180mm. Short cranks simply work better on recumbents, so much so that it now seems remarkable to me that most of us still make do with our long, road-bike-adapted cranks.

I became interested in short cranks after reading Bob's comments about them in his article on "Recumbent Bicycle Components" in RCN 086 (sold out issue). I had never thought much about crank-arm lengths. I assumed that manufacturers knew what they were doing, crank performance-wise, and my Ryan Vanguard, Barcroft Virginia, Vision Saber, and 1998 and 2001 RANS V-Rexes all arrived with 175mm Shimano 105 cranks. Only my present Rotator LWB was a bit different; it had 170mm's.

That's why Bob's article got my attention. It so happened that I liked pedaling the Rotator somewhat better than pedaling my V-Rex or Saber. It just somehow felt better and more efficient. Could the slightly shorter cranks be the reason?

Although nervous about this irreversible modification (shortening the cranks), I nonetheless decided to mail the 175mm Shimano 105's from the V-Rex to Mark Stonich of Bikesmith Design for shortening to 153mm. This seemed to me at least worth a try. I had cranks on my mind and the Shimanos were

FOR SHORT CRANKS

- Smaller pedal circle
- Promotes spinning
- More aerobic
- Better climbing
- Lower gears
- Shortens chain
- Lightens chain, crank and bike
- Custom chainring combination

AGAINST SHORT CRANKS

- Hard to find
- Only a few models can be shortened
- This is a foreign language to builders, and it's difficult to find information if you're not "in the know."
- Adds x-seam to your seat or boom adjustment — allow for an extra inch (With a 44.5" x-seam, this bumps me out of the fit range of several recumbents)
- Still a bit experimental



Author Thad Sitton

already off the V-Rex. I had just tried and failed to find any significant performance advantage from a set of Rotor Cranks of conventional length (returned for a full refund). After hazarding \$750 for the Rotors, \$45 for crank shortening (plus mailing, etc.) didn't seem like much.

The 153mm Shimanos soon arrived from Mark, complete with a handsome, new, slightly downsized FSA 24/39/48 chainring set — and I gave them a try. (An unnecessary downsizing, I now believe) I should remind you again of Bob's comment that "every *body*" is not the same, but I'm of average height and weight, 5' 9" and 165, and I loved these short cranks from the first time around the block. What were they like, you ask? Basically, they just felt much easier to use. Riding the bike was suddenly more fun. The effect was dramatic, as if somebody had stopped beating me with a stick! The 153mm's were slicker, quicker, and easier than the long cranks, which I had available for ready comparison on two other familiar recumbents.

While on the V-Rex my feet now whizzed around a reduced pedaling circle at a faster cadence, and my knees now passed through approximate right angles at maximum flex instead of going an awkward distance beyond that. Riding seemed easier and more efficient right from the start.

I almost couldn't believe it, and for two months I went back and forth between the 153mm's and the 175mm's, though the V-Rex with the 153mm's became my main ride. But I found nothing to change my initial impressions. The bike with the short cranks just felt better and seemed to work better — as I said,

quicker, slicker, easier. The bikes with long cranks, each of which I had ridden several thousand miles, now felt awkward. Riding them, my knees seemed to thrash around furiously with inadequate payoff in vehicular motion and a lot more muscle and joint wear-and-tear. They felt like "Yuck!"

So, at least for me, the "feel" difference between the cranks was very great, but what about performance? That also improved, I concluded. In fact, if the \$750 Rotor Cranks had worked as well as this \$45 crank shortening, I would have kept them! I went faster on downgrades, spinning faster and up-shifting sooner. The bike also accelerated better with the short cranks, rapidly jumping speed to make a green light, attacking a roller hill, or escaping a pursuing roadie.

Hill climbing performance was more difficult to figure out, and that is a critical factor for any recumbent. The quickened acceleration helped with the run-up to roller hills, spinning seemed easier, and steep, grind-up hills seemed at least no worse. The shorter crank arms decreased my leverage on the pedals, but I now used a stronger leg thrust derived from a shortened power stroke. As any weight lifter knows, you can use more weight in a partial squat than in a full squat. Leg power peaks in the last one-third of leg extension, and I now climbed hills using that end-of-leg thrust advantage.

After a month, I put the matter to the acid test in a favorite, very hilly, 26-mile ride in the famous Lost Pines of Central Texas, a course that I rode on a V-Rex in its long-crank configuration at least fifty times. This CCC-built (Civilian Conservation Corps) road between state parks is a veritable roller

coaster and not a good locale for a recumbent dealer to set up shop. For 13 miles out and 13 miles back you are either toiling uphill at 3 mph or roaring downhill at over 30 mph, with not much in between. So, by the nature of things, you spend most of your time climbing.

Over the years, a good many road bikers have become pedestrians on this ride. I've met some double chainring folks pushing bikes with tears in their eyes. I'm not kidding. It's partly optical illusion, but some of the steeper hills look unrideable as you approach them. They look like sheer walls!

I know what this route feels like, the gears I normally use to climb various hills, how long it takes me to the ride, and how tired I usually feel at the end. Now I rode it again, and the short cranks made a very noticeable positive difference. I climbed easier, had less leg burn on the big hills, and finished the ride sooner and much less tired than usual. It was surprising difference, more than I believed possible. Three weeks later I went back to check if my earlier experience was a fluke or whether my mind was playing tricks on me. But it was the same as before. The short cranks somehow effectively pulled the teeth out of this rather gnarly ride.

My knees also felt better, and no wonder. Now, my knees reached only approximately 90 degrees at maximum flex in each pedal cycle instead of a more acute more flexed position, as with the 175mm's. Is it accidental that the standard 7" stair tread (on a flight of stairs) requires just less than a 90 degree leg flex? I think not.

I don't have knee problems, but over the years I've strained my right knee several times on difficult hills and too-high gearing. With the short cranks I seemed more comfortable and less likely to injure myself. And I have noticed something else. Because of the respective ergonomics, road bikers with 175mm's reach only the optimum 90 degree point when they pedal, while recumbent riders with 175mm's go way beyond that. My conclusion: 175mm's are only suited for road bikes!

So, why then do almost all of our new recumbents show up with unreasonable 175mm cranks on them? Probably for the same reason they also show up with big chainrings and unrealistically high gears: so they will look fast like road bikes.

But what if recumbents don't go fast exactly like road bikes? What if they are bikes that go fast by spinning at high rpm's? In a nutshell, my theory goes like this: Road bikes are a highly evolved form, over a century old, and the common 170mm crank-arm length is a traditional and effective compromise which works best for that style of bike. It is a compromise because road bikers have the big advantage of being able to use three techniques to put power to the pedals: standing, mashing, and spinning. Riders who stand, or who mash big gears while remaining seated by throwing their body weight from side to side, benefit from gravity, vertical position over the pedals, and the leverage of longer cranks. Spinners, however, and all road bikers who do a lot of fast spinning, will benefit from shorter cranks.

The point is obvious. Recumbent cyclists can't use their weight on the pedals, can't stand or mash, and therefore gain less benefit from the leverage advantage provided by long cranks. Recumbent cyclists are specialized spinners who are helped by shorter cranks that promote faster spinning. Using big ol' awkward, long-arm road bike cranks on recumbents is kind of dumb, actually.

Ponder the words of Richard Ballantine in *Richard's Bike Book*, page 102: "Broadly, long cranks are for slow pedaling and delivery of torque through leverage and short cranks are for fast pedaling and delivery of torque through momentum." Going fast (or just going efficiently) on a recumbent is all about delivery of power through momentum, and short cranks help you create more crankset momentum.

My experience suggests that every serious recumbent cyclist should somehow contrive to beg, borrow, or purchase a bike with short cranks for a tryout. My bet is that a little testing back and forth between long and short

will leave many of you as convinced as I am. Finding a set of short cranks in the 140-155mm-range is not that easy, but Bob Bryant did an excellent job of discussing possible sources for such cranks in RCN 086, and has updated that list here.

To sum up, I think that when the recumbent Moses came down from the mountain, his stone tablet had only one commandment on it, "Thou shalt spin! And short cranks help you spin better." ♦

Special thanks to Mike Librik at www.easystreetrecumbents.com

SHORT CRANK RESOURCES

• **Angletech:** Offers TA Carmina 155mm cranks in custom configurations (\$267 and up plus bottom bracket) and Phil Wood bottom brackets to hold this beautiful crank. The Carmina is a modular crank that offers an inside chainring of 20 to 24-teeth, a middle chainring of 30 to 40 teeth and an outside chainring of 42 to 50 teeth. Also available are single and double cranks <www.angletechcycles.com>.

• **Bikesmith Design:** Mark Stonich is the short crank guru in the USA. He shortens cranks, sells new shortened cranks and re-gears them. <www.bikesmithdesign.com>.

• **Greenspeed:** Offers 125mm-155mm shortened Shimano 105s, 75mm to 155mm Tiagra and 155mm and up TA Carmina cranks. Greenspeed is the first manufacturer who is getting behind this trend. <www.greenspeed.com.au>

• **Hostel Shoppe:** 150mm and 158mm 30/42/52 cranksets for ISIS BB's <www.hostelshoppe.com>.

• **HP Velotechnik:** HP offers a 155mm 30/42/52 crank option <www.hpvelotechnik.com>.

• **Rotor Cranks:** Rotor offers a unique RS4X crankset in a 155mm 26/39/52 (or similar) (\$729) <www.rotorcranksusa.com>.

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Sidebar: Short Cranks

By Bob Bryant

Since reporting about short cranks back in RCN 086, I have spent many miles spinning along this past season on 145mm, 155mm and 165mm cranks on a variety of recumbent bikes and trikes.

My first experience was with a Greenspeed GT3 and custom TA/Schlumpf 145mm cranks. I knew this was something special by the time I got to the end of the street. My legs were moving faster than ever before, but spinning a smaller pedal circle — which seemed odd at first. I sensed that I'd crossed an aerobic threshold not possible with longer cranks. I was spinning and breathing better than ever. On my first ride I raced through town, and sped up the steepest hill in town (Morgan Hill) invigorated like never before on a recumbent. It was an experience much like the first time I rode a recumbent back in 1986.

Over the course of the season I tried the 155's on PT locals Lynn Rideout's classic Stratus, 155mm Rotors on John Lockwood's V-Rex and on a Greenspeed X3 RCN test trike. I also tested out 165mm cranks on a Catrike Speed. After a lot of riding and pondering, I decided that the 165mm actually seemed a bit long, 145mm a bit short — and the 155mm near perfect. I have no scientific data, but my Catrike experience confirmed this.

Short crank gearing is still a bit of a mystery. Most riders will prefer slightly lower gearing than they currently use. However, most new recumbents are geared too high, so how low do you go? Bikesmith's Mark Stonich offers this advice on gearing: "If you are spinning out with 170s, gear the same with 155s. Otherwise, reducing each chainring by 4-6 teeth on each rig seems to work well. Most people are going from 30/42/52 to 26/36/46 or 24/34/44. The 4-6 teeth estimate is similar to Greenspeed's theory of reducing the chainring size by the same percentage that you reduced the crank arm length. This is all a bit experimental and will require some careful thought to personally customize new lower gearing for your short cranks

So where is the industry in all of this? The odds are good that anybody who sells Greenspeed's will have a basic understanding of the benefits of short cranks. Manufacturers who read RCN may as well. However, don't hold your breath. The majority of manufacturers I asked, even those who receive RCN, had NOT read my comments and the quotes from users in RCN 086, or didn't have an opinion. One said, "I don't like short crank arms." My response was, "Did you read my article, and his response was, "No." Others may be thinking that folks in hilly areas just don't ride recumbents or most recumbents are being sold in Kansas, Florida and a few other generally flat states. One trip up Cook Avenue down the street from where I'm tapping out these words would convince these non-believers otherwise. Too bad most won't even read this. So, I dedicate this article to those forward think-

ing recumbent manufacturers and dealers who are actually considering short cranks. Imagine that if my 6' tall body finds that 155mm cranks work better, how much better a 145mm would be for a 5' rider — or how ridiculous a 170mm "road triple" is for a 5' tall recumbent rider.

I agree with Thad Sitton that recumbents seem to be geared by marketing hype (a set of big "road racing triple" gears means it goes fast) than actual useable gears for real world riders. The only recumbents that can actually use a road triple are very fast performance machines or those with smaller drivewheels. ♦



Shortened cranks — Thad Sitton

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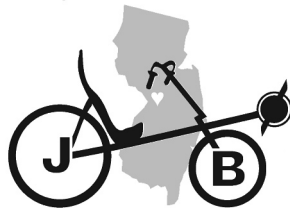
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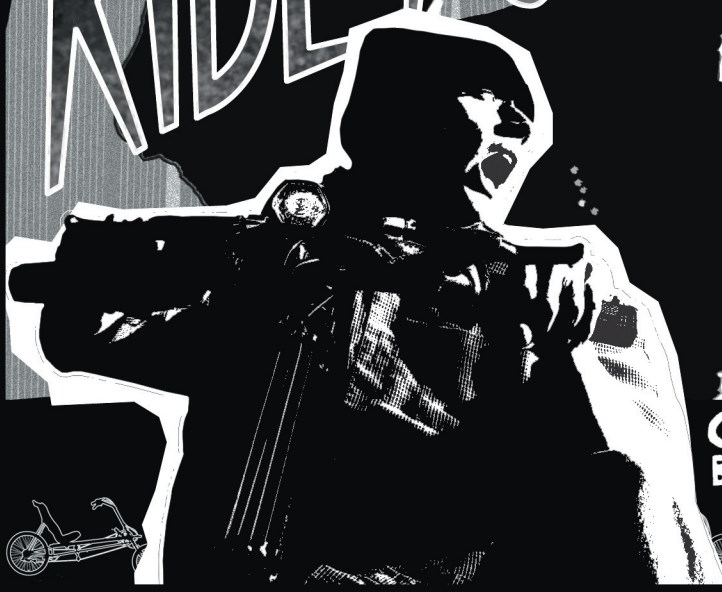
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