

# RCN

RECUMBENT CYCLIST NEWS

Issue # 66  
Nov/Dec  
2001



## *Marty Goodman and his Gold Rush + Body Stocking on the California AIDSride*

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**Contact**

For circulation questions, concerns or missed issues, please drop us a card or email to:

RCN  
PO Box 2048  
Port Townsend, WA 98368  
Voice Mail: 360-344-4079  
Email: drrecumbnt@aol.com  
Web: www.recumbencyclistnews.com

**Schedule**

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**■ On the Cover...**

Marty Goodman and his Gold Rush on the California AIDS Ride

**■ In Our Last Issue...**

RCN#65 Sept./Oct 2001—This issue was mailed in September. It has a red cover with a photo of the HP Velo Speed-machine

**■ Our next issue...**

RCN#67 Jan./Feb. 2002 by February 1. This issue will be our 2002 Season Preview issue.

# **Editorial License**

## **A Changed World**

*by Bob Bryant*

*bob@recumbencyclistnews.com*

It has now been a few weeks since the World Trade Center and Pentagon bombings. With this horrendous atrocity and terrible loss of innocent lives, I thought a rewrite of my intended RCN#66 editorial was in order.

It is difficult to even send this issue to the printer. This just doesn't seem important in contrast to what has happened. It almost seems disrespectful to just go back to the norm. I guess like everyone, I have given a lot of thought to life, death, freedom, heroes, war, family, and those lost in this tragedy. In my personal thoughts since the tragedy, I have wavered between feeling like a peace activist who wants to turn the other cheek, and feeling like an irate American who's been violated, and who demands that our country's leaders show military force in bringing justice to the plotters of this tragedy. Lets just hope we don't end up with another Vietnam situation.

If you lost a friend or loved one in this tragedy, please accept our sincerest condolences.

**What's important**

9/11 showed us that we just do not know how long we have on this earth. It seems like a good time to reevaluate our personal missions in life. Perhaps we'll see a shifting of values from a consumeristic pursuit of the next better "thing" to one that is more about caring, community, family and life itself. Maybe if the cycling community could get more enthusiastic about being volunteers and organizers, and less deeply involved in things like new equipment upgrades we'd all be making better use of the time we have here.

**Community, Family, Tribe**

In times of trouble, it is essential that we connect with our community, our families or our tribes. Having a good diversion is important. As cyclists, it is a good idea to connect with other cyclists. Find a rider group, bicycle activist group or transportation alliance. Get involved. Go to your city council meetings. Make your community a better place for cycling and/or a better place to live. You can make a difference—and you'll probably feel better in doing so.

**Safety Concerns**

With personal safety so much in the news,

we as cyclists need to remain alert. We are all at risk. There are 43,000 traffic fatalities on our highways each year. Around 500,000 bicycling accidents require emergency medical care each year. The numbers are high enough to make most cyclists sit up and take notice.

Marilyn and I have recently been involved in a city council campaign in our small town. What we have noticed most is that the majority of people don't get involved, and those who do can really make a difference.

A case in point: A friend of mine lives on a very busy street in a Seattle suburb. His county councilman sent him a mailer that outlined all of his great successes during his most recent tenure in office. My friend was a bit put off by the mailer, since nothing much had changed for the better in his neighborhood during the councilman's term in office. He wrote the councilman an e-mail about the intense traffic, speeding and unlawful behavior of motorists in his neighborhood. This started an ongoing communication between the two of them that resulted in more county police patrolling the area and a traffic study of the neighborhood. This was a fine success. My friend's fine success story inspired me to contact our local police chief's office and our city government to find out if there are any committees or other groups I could join to try to support the cause of non-motorized transportation in our own community.

**Cars & Bikes**

Many cyclists are weekend warriors hauling their bikes to rides on the rooftops of their SUV's. We welcome and respect all cyclists, however, we invite these riders especially to take a more active approach to cycling as a lifestyle and mode of transportation. If you ride a bicycle in any major metropolitan area, you know that the automobile has become the natural enemy of the bicyclist. Whether from a safety perspective, or a lifestyle perspective, all we're asking is that you take the time to become educated.

We were invited to dinner a few weeks ago by a local couple. I had not met this fellow before, but I knew of him. He drives around town in a big 4x4 crew cab truck. I was shocked and appalled when he started telling me of how at one point in

his life he enjoyed speeding past cyclists as close to them as possible to scare the crap out of them in his big construction company truck. It is scary to think that this goes on.

My pal Ron Schmid and I discuss safety on occasion—usually in relation to his favorite recumbent, a tadpole Counterpoint Triad trike. Ron has a very realistic view of safety on his tricycle. First, he isn't one of these "let's try and put it on two wheels" tricyclists, he doesn't race, nor does he own any ultra-low recumbents (yet). Ron's words of wisdom include carefully planning routes and constant use of mirrors on his recumbent rides. We agree: Route planning and rearview mirror usage are linchpins of safety for recumbent riders.

I was talking to another local cyclist the other day about safety. He told a sad story of a lowracer rider in traffic and a car driver who could not see him in his car's rearview mirror—the lowracer was too low. The rider got upset and hit the side of the car, the driver pulled over and tried to explain that the low bike was too low to be seen in his mirror. The cyclist made a smart comment and rode away. I won't go into my personal feelings about lowracer safety in general here, as it is always up to the individual rider to make up his/her own mind about the dangers of poor visibility for riders on lowracers.

## Activism

In the spirit of reflection brought on by the tragedies of 9/11, we invite all of our RCN readers and cycling friends to pause and give some extra thought to safe cycling, to take a more active roll in improving trails and other facilities for bikes in our own communities, and to enjoying every day we are given to ride, walk, or just be alive.

For those of you who may want to at least consider becoming a cycling activist, we suggest the following as excellent resources in this area:

*Divorce Your Car* by Katie Alvord

*Effective Cycling* by John Forester

*Urban Bikers' Tips & Tricks* by Dave Glowacz

There is also lots of information at [www.kenkifer.com/bikepages/advocacy/](http://www.kenkifer.com/bikepages/advocacy/). We would like to print other resources, please send us your book and website recommendations.

Viva Recumbency, love, peace.

Bob Bryant ♦

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Mailing label info: "66 LAST ISSUE" means that RCN#66 is your last issue. Please take this time to check your address label and send in your renewal (see page 9 for form and special discount).

**Change of address note:** If you move, don't forget to send in your new address 60 days' notice so you don't miss an issue (if possible). If you move seasonally—please notify us ASAP. We now have the ability to keep two addresses on file and can do manual seasonal address changes for you. [bob@recumbencyclistnews.com](mailto:bob@recumbencyclistnews.com)

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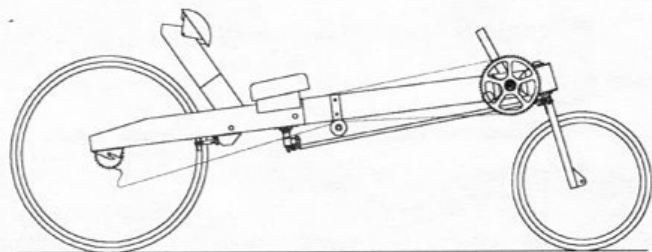
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# Recumbent News



## 2x4 Wood Frame LWB Recumbent: Turbo 4

The Turbo 4 is a 65" wheelbase recumbent that is both inexpensive and extremely simple to construct. The frame is built from an ordinary 2 x 4. It has been statically load tested to more than 900 pounds. It weighs in at 28 pounds. No welding is required in its construction and only a single machined part is needed, a standard bicycle crank has to be turned down a slight amount. Further, no parts have to be salvaged from old bikes.

For more information or to order plans, contact James Robinson [jrobin1836@aol.com](mailto:jrobin1836@aol.com) or Tel. 915-655-9299. Plan sets are \$37.50 and include 3 blueprints, a parts list and 3 pages of text.

## No Weld Recumbent

We have recently been told about a recycle SWB plan set that can be purchased for \$6 at: <http://hometown.aol.com/david5430/order.html>

## Slipping Rans Seat Fix

The most common cause of seat slippage is not having the seat QR adequately tightened. The QR needs to be twisted until it starts to become difficult to turn, and then the lever needs to be cammed over.

For those riders that have done this and the seat still slips we have come up with a "seat shim" to help prevent the seat from sliding. The seat shim attaches to the inside of one of the seat angles (self-adhesive) on the bottom of the seat, and helps to tighten up the tolerances between the seat angles and seat channel.

Source: [www.rans.com](http://www.rans.com)

## A New Trice

The new Mini is SMALL along the lines of the Micro but with a higher seat and very narrow track. This is a very compact light trike which will appeal particularly to smaller people. Pictures, prices and specs are all on the Web Site—[www.ice.hpv.co.uk](http://www.ice.hpv.co.uk)

## Interbike Update

We had a crew of two reporters and one undercover spy at Interbike 2001/Las Vegas in October riding the new bikes, and talking to folks and collecting all of the industry gossip that we can cram into one issue of RCN.

The biggest news is probably from Cannondale who unveiled their \$2000 (approx.) "Easy Rider" full suspension CLWB ("mid-wheelbase") recumbent, which looks pretty nice. We're expecting a test bike by the time you read this. Bacchetta was there with the Giro and Strada—more dual big wheel buzz. Updated SWB frame designs from Vision, along with their new upright bicycle, and much, much more. Look for our full report in RCN#67.



## New Trike: The Catrike Road

It is a great pleasure to introduce you the Introducing the new Catrike "Road." This new trike is more performance oriented, lower, narrower, lighter and faster. The components are neater and frame is aluminum. The Catrike Road was developed over 8 months of research and development, including 7 prototypes, thousands of miles of testing and new tooling and equipment.

The new Catrike is built in our own production facility in Orlando, Florida. We have all new equipment, covering from frame building to final assembly.

Source: Catrike, see at [www.catrike.com](http://www.catrike.com)

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## BikeE Suspension Fork Recall Important Recall Notice for Consumers

In cooperation with the U.S. Consumer Product Safety Commission 2000 and 2001 BikeE FX and 2001 BikeE RX-Full Suspension are subject to a voluntary recall:

We have encountered two situations in which the pressed fit pins secured by set-screws holding the 2-bar linkage of the front suspension fork became loose and fell out. In both cases the riders sustained minor injuries. If these pins were to come out while you were riding you could lose control which could cause serious injury.

We ask that you immediately stop riding and bring your BikeE with front suspension to your Authorized BikeE retailer for a no-charge recall service. If your BikeE is affected, your dealer will install a new linkage kit that will include locking cir-clips to insure your safety.

We apologize for the problem and thank you for your cooperation. Please call 1-800-231-3136 or visit [www.bikee.com/recall](http://www.bikee.com/recall) with any questions.

BikeE Corporation

### Attention Rider Group Members & Leaders

We are rebuilding our rider group listing from the ground up. Please send us your current rider group contact name, phone and website or email.

Thank you

## Events Calendar 2001

October 21, 2001

Atlantic Bicycles Semi Annual Recumbent Rally

Contact: Atlantic Bicycle

November 4, 2001

Recumbent Rally in Louisville

Water Tower, (River Road and Zorn Avenue). 11:00 am rain or shine. Contact Tom Armstrong 502-253-1746 or [bikeolounger@prodigy.net](mailto:bikeolounger@prodigy.net) or Harry Jacobson-Beyer at 502-634-1103 <http://pages.prodigy.net/bikeolounger>

2002 Events—Event planners, please send info ASAP

Please email your event information to: [bob@recumbencyclistnews.com](mailto:bob@recumbencyclistnews.com) or mail to: RCN, PO Box 2048, Port Townsend, WA 98368.

### Missing RCN#65!?

Due to the terrible tragedy in New York City and Washington DC on September 11th, 2001, many RCN#65's were delayed. If you did not receive this issue, please let us know ASAP via email [bob@recumbencyclistnews.com](mailto:bob@recumbencyclistnews.com) or call 360-344-4079.

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You have probably never ridden a bike this fast or this comfortable. In fact you probably assumed that gain meant pain. But the Speedmachine rewrites the rules. By combining a super-oversized aluminium frame, a full suspension ride and a totally ergonomic riding position with perhaps the smallest frontal area on the planet, we have created a machine to give you incredible performance along with total comfort.

Remember, at racing speeds it's not weight that slows you down, it's the effort of pushing through the atmosphere.

On the Speedmachine your body is an arrow, cutting through the air with ease and giving you a seriously unfair advantage. And in this riding position your entire body is supported, so that your weight is distributed over the largest possible area. No pressure points!

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We call this "No Squat", and it is a system that has been perfected over thousands of miles of extreme roads by our team of test riders.

What it means is, if you accelerate uphill, you accelerate. And because it isolates you completely from the road, your energy goes entirely into forward motion. It works, so that you don't have to.

We haven't neglected the accessories either. We can offer an integrated luggage rack, proper mudguards and practical fairings. Four seat sizes ensure the perfect fit.

Of course it is the technical details that make the difference, and in this area our experience is second to none.

We made our first recumbent with full suspension back in 1991.

Since then, our Street Machine has become the most successful touring recumbent in Germany.

Our customers have taken our bikes to every corner of the world and they have provided us with invaluable development feedback.

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## Cannondale To Introduce Recumbent in 2002?

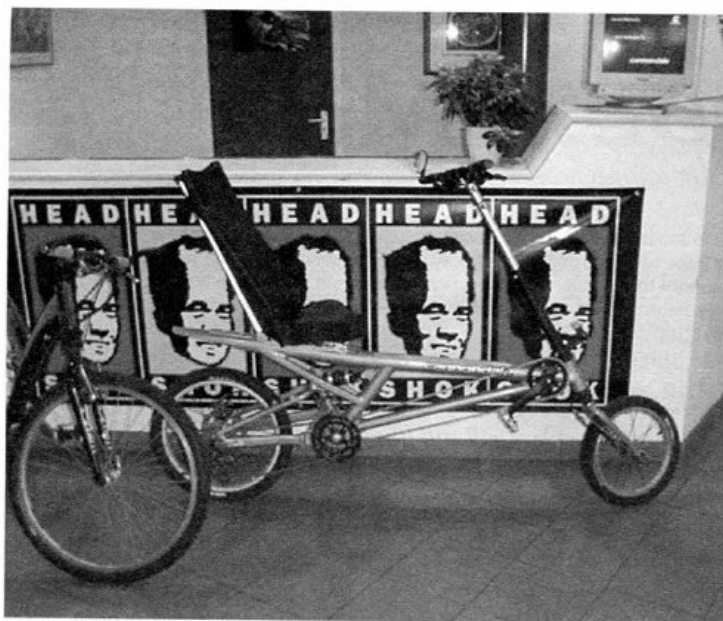
Shortly after RCN#65 went to press, we received a call from Cannondale to let us know about their new recumbent model. After years of rumors, it is now official enough for them to have made a call to us. We were supposed to have one of the preproduction models shipped out to us for a preview test, but it has not arrived as of yet.

Rumors of the Cannondale prototypes have been rampant on the Internet for weeks. We have heard of SWB, trike and the CLWB models. The CLWB appears to be the model slated for production. This preproduction prototype CLWB was seen at the Brighton, UK HPV Races. The price appears to be \$1999.

From our initial view of this bike, the frame is aluminum, with a sliding seat and a 406mm 20-inch rear wheel and a 305mm 16-inch front wheel. The rear and suspension are downsized versions of what comes on their MTB's. This model is surely slated to go up against the very popular BikeE RX.

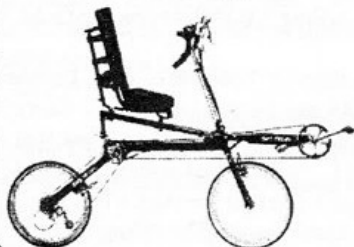
As with most mainstream bike manufacturer's entrances into recumbency, our #1 concern will be design refinement: details such as cable runs, ergonomics/control reach, seat stiffness. These details are what give the long term recumbent manufacturers the lead over their mainstream bike industry brethren. So far, no mainstream manufacturer engineers have been able to master these details the first time out of the gate. Lets hope Cannondale does. ♦

*Photo Credit: Spy photo of the Cannondale recumbent. Sorry, about the lack of a photo credit. We don't know who took the photo or where it came from.*



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# Recumbent Mail

If you have something to say, a differing viewpoint or experience—we want to hear from you! **Please limit letters to 300 words.** No charity ride sponsorship request letters. RCN reserves the right to edit submissions for clarity, content and space limitations. bob@recumbencyclistnews.com or RCN, PO Box 2048, Port Townsend, WA 98368

## RCN vs the Competition

RCN is a long-time proven, polished, pro product with personality in an obviously very tough field that's full of casualties.

It's great to hear that some manufacturers are coming back to the RCN fold. Note that Bob has paid a high price for his QUALITY and INTEGRITY, but that he has refused to budge. Both the reader and the market benefit. This deserves kudos from all sides. (You know, something like a PRIZE, perhaps?) How many other mags can say they stand up like RCN does, as long as it has?

If some folks, say, don't like the newsletter-like price of RCN (lots of opinionated newsletters charge quite a bit for hardcore info), such readers should take their heat out on the manufacturers who won't support their biggest (and only) INDEPENDENT trade mag. Both readers and manufacturers should be so lucky that they have such a mag. I've been around mag publishing for 20 years and have studied the history of it going back to the 1800's and RCN is the real McCoy, ever more rare today. In fact, this style is hardly in existence any more today. In 90% of today's publishing "sell out" is the first thing you notice.

The crazy thing is that today manufacturers expect mags to behave in lilly-livered ways if they want their ad \$. They want "yes men" and deserve the results they get. We get "Buy-cycling" as a result. Is there any classic journalism coming from that mag anymore as in the days of the BOOM in cycling? When cycling was booming, the *Bicycling* reviewers were cranky old farts, highly opinionated, but high integrity. I didn't always agree with them, I resented that they held the mic sometimes and ignored other options (lots of them were unfair to bents). But they were standup guys just the same. And I think that such integrity is CONNECTED to a boom. When manufacturers get the nerve to face the music of truly pro business procedure they will get the payoff of such bravery. There will be a snowball effect. Those who do good work will prosper, just like bike makers did back in the day when *Bicycling* actually criticized bikes.

Sure, there might be makers who feel like they can't get a fair hearing. I'm sure ('bent) makers felt that way about the old *Bicycling*. But the cure is NOT to have sell-out reviewers. If a quirky, cranky reviewer hates a bike, he has to be honest. Let someone else review bikes in a more cheerful style if they like. I bet that in general good work would still get through from the ground up. It has to pay its dues, too. (As regards something like lowracers which Bob says he doesn't like, you can't get a fairer way to deal with it. He states that anyone else who wants to review them is welcome to. Cool!)

Of course RCN isn't perfect, it's simply the only real player out there. We should acknowledge the fact that we're talking the difference between kindergarten and grad school when comparing new mags to RCN.

The scene welcomes any newbies to the recumbent media field. The more the merrier, man. But let's keep perspective.

Jeff Potter, jp@outyourbackdoor.com

**Editor Comments:** A version of the above was sent to the alt.rec.bicycles.recumbent newsgroup. The comments are in regards to the two new print magazines that cover recumbents and tandems. We have heard that one has since gone under. We did see our RCN recumbent rider group listing in one of them (a really outdated 2+

year old version at that). We're fine with the competition, though we do hope that readers will still like to read the diverse "written by recumbent enthusiasts, for recumbent enthusiasts" style of RCN. Unlike ALL of the competition, we do not rely on advertising for our sole means of support. With this and a little luck, this helps our long term sustainability. We have a proven track record—11 years of on-time (for the most part) publishing. RCN prints around 200 pages per year of recumbent editorial. The newbies are about 1/3 ads and 1/2 about tandems (which can be wedgie tandems). RCN will produce 3-4 times as many pages per year devoted to recumbents.

## Comfy Optima

Just a little update on my recumbent riding this year (you got me into this back in Feb. 2001). I am approaching 3,000 miles on my Gold Rush (great recumbent!)

Well, I bought an Optima Baron through Yellowbike.com. I made this purchase because they offer a 45-day no questions asked return policy. I was not sure how I would like being reclined and how this would affect my neck problems; so I felt that I had nothing to lose since I could return the bike. I can tell you that the issues that I thought would crop up have never materialized. The riding position is incredibly comfortable. I have been out for 50 60 mile rides without any strain in my back or neck. If anything, I am more relaxed on the Optima on a long ride than the GRR.

This recumbent "flies" in the flats and rollers. I can hold 23 mph in the flats without breathing hard. I am probably getting at least 2 mph more speed from the Baron than the GRR. I can push to 28 - 30 mph for short bursts. In the down hills, the Baron is much faster than the GRR. I have a 39/53 front and 11-23 rear, so I have not tried the worst of the climbs around Cincinnati yet. I can tell you that I have climbed several 1.5 mile hills. The Baron is about 2 mph faster than the GRR up the same hill. I thought the GRR did great up hills, so this says quite a lot for the Baron. I am about to put a 27 rear on the Baron so that I can spin more in the hills. The design of the Baron seat allows one to exert a great deal of power to the crank arms during climbs. The Baron that I bought weighs in at about 29 pounds. I have a new seat and wheels on order, that was supposed to come with the bike, that will chop another 2 pounds off its weight.

The "low ride" in traffic does take getting use to. Looking at the hub of a car or truck makes you well aware how low you are. I must say, though, vehicles keep their distance. I think the uniqueness of the style creates second looks and attention. On several occasions I have had cars stop in the middle of the road just to look at me go by.... It is a must to have a mirror on your helmet. It is not easy to crank your neck around. The Baron is not a recumbent to ride around your neighborhood block with your kids or wife; or to go to a local store. It is a great recumbent for bike trails, long rides in the country, or cruising out of the city towards the country.

As I said, the longer the ride the better you feel on the Baron. By the way, the leg position has not created any problems for me. Both my feet and legs feel great. Your position is basically the same as on a racing bike, but you have rotated yourself 90 degrees.

I still have my GRR. I have been using it as my "cruiser." I love



the GRR and the people behind it. The GRR is a great all-around recumbent. My only problem with the GRR is its size. The Baron is much easier to throw on my car and go....

You need to try one of these "low racers" for a 100 miles or so. They are neat and fun to ride. By the way, I picked the Optima over the HP (besides the 45-day return policy) because of the weight advantage of the Baron. The suspension on the HP adds the pounds. I have ridden over many bumpy roads with the Baron. I really do not notice the bumps. The seat seems to do a good job in soaking up the shock. Hopefully HP will come out with a non-suspension model. Personally, I think a rear suspension on a recumbent is not necessary. It only adds weight and bounce.

The biggest problem that I have with recumbents in general is that there are 50 different styles; and, I want to try every one of them. What's next? A Vision Saber? A Challenge? M5? Rotator Tiger? Wedgies are basically all the same. Easy to buy one Wedgie and to be content. Not so with recumbents. It's too much fun. I almost forgot that the by-product of this fun is called exercise.

Doug  
rdougpen@email.msn.com

**Editor Comments:** We have yet to be offered a lowracer test bike. We'd like to try one.

#### Tour Easy vs. V2

I received the latest issue of RCN yesterday, complete with my article on TE vs. V2. Cool! However, we've hit an application of Murphy's Law. The email address listed with the article is obsolete. I've changed ISPs. My new email address is: toureasy4u@yahoo.com

Thom Remington

#### Pedals & Leg Suck

Recently, I bought my first recumbent, a Linear LWB, USS. Yesterday on my second long ride, I had my first major crash. My feet came off the pedals as I was accelerating downhill, away from a stop sign. I was in too low a gear for my speed when I tried to start pedaling which is why I came off the pedals. My left foot hit the ground and was pulled under me which dumped me to the right. Result: left ankle sprain and some road rash. I'm not blaming anybody but me. I came off the pedals twice in short checkout rides around the neighborhood (no crash) so I knew it could happen and I figured the result could be serious.

I'm a new subscriber to RCN so I don't know how much talking you and your readers have done about pedals, clips and clipless. I have to believe that losing the pedals may be THE major safety issue for new recumbent riders (regardless of make or model). Obviously (my hindsight

is 20/20) toe clips or clipless pedals are a must. I've seen two letters in RCN on the subject, one from Storm Conners in #62 who had clipless pedals that wouldn't release when he stopped so he fell over a lot. The other letter was from Randall Morgan #64 who suffered a spiral fracture when he crashed and the clipless pedals he had didn't release. This does not increase my confidence regarding what to do about pedals. I doubt if toe clips will work. Anyway, I think you should be flogging this subject mercilessly in RCN and any advice you can give or pass on would be most appreciated.

Incidentally, I bought the Linear because it seemed to be such a simple design (adherence to the KISS principle) & it was about as close to a "cruiser" as I was going to get with respect to what's available in Cincinnati. I like the bike but my riding days are over until I can resolve the pedal question.

Doug Filbrandt  
filbrandt@mail.one.net

**Editor Comments:** Sorry to hear about your problem. The Linear has a high BB, this makes it a candidate for the dreaded leg-suck (foot slips off pedal and is sucked under the bike). When not road testing for RCN, I mainly ride low-BB recumbents and I don't ride with clipless unless I am going on a long ride or trip. The higher the BB, the more necessary foot retention is. However, you can find decent pedals that grip your shoes better. I use VP bear trap pedals that come from Rotator, along with SCOR Kneesavers. The last time I had a Linear here (many moons ago), it had really cheap plastic pedals. Riders should consider their pedal choice when selecting a recumbent. Low-BB recumbents are more suitable for riding without clipless pedals.

#### Wedgie Fever

Read your RCN issue 64 through cover to cover, and as always, enjoyed it. I even corresponded with some of the authors of articles in that issue. However, recently I came across the word "Wedgie" referring to the conventional bicycle. Maybe I'm out of tune with today's bike slang, but I've never heard of the word used here in the Northeast. So, I'm curious to find out how the word developed, and who uses it the most.

Joe Cormier  
JOCOR333@aol.com

**Editor Comments:** I may have started the term "Wedgie" as it relates to upright bicycles in the context of recumbents. It is a somewhat derogatory term, meant in a comical way. I first heard the term on Saturday Night Live. It was a skit about a game show called "Wedgie Fever" where the contestants' underpants were tightened with every incorrect answer. I'll leave it up to your imagination to figure out the rest. ♦



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# **Reader Review:**

## **The Vision Saber**

### **Super 'Bent Meets Road Wedgie**

by Rob Welsch  
rob@losscontrolsolutions.com

The Vision R65 Saber is a unique recumbent bicycle. It rides like an upright with all the comfort of a recumbent. It is one of the quickest, most responsive, best all around handling bicycles I have ridden. It isn't perfect, but for covering a lot of miles in a short time it is awesome. It has also garnered a lot of strong comments from hard core recumbent designers. This bike could be the start of a movement designed to lure high-end upright enthusiasts to the wide seat world, but it may take a while before it gains wide acceptance from long time bent designers and riders.

One of the first things you notice when riding the Saber is that you can be part of the mainstream road-riding world. With twin large wheels and a short wheelbase, you are the same length and your head isn't much lower than the head of a typical upright road rider on the drop bars. Wedgie riders that would ignore or quickly ride around other recumbents will acknowledge you on a Saber. If you are so inclined, you can join and even contribute in a pace line. If going fast isn't everything, it's still nice to be able to look eye-to-eye while carrying on a conversation with 98% of the rest of the biking world.

The Saber looks fast even when it's parked. The bike catches your eye whether you are a bent or upright aficionado. The big wheels, the hooded brake levers on dropped bars, the clean mono-tube frame and the laid back mesh seat all stand out. The Saber looks a little like an upright road bike with the handlebars set back about two feet.

#### **Technical Specifications**

##### **Frame/Fork**

The frame is a single 4130 CroMo tube running from the crank in front to the rear wheel at about 2 o'clock. From the crank there is a slight downward angle to the steering tube intersection, a drop of about 4 inches overall. The standard Vision extender boom in front adjusts for leg length. The rear seat stays are welded to the main tube just in front of the rear wheel and drop another 8-inches from there to the rear wheel dropouts. Two 3/8-inch steel tubes are bolted to pannier eyelets on the rear dropouts and joined by a bar, painted to match the main tube color, and provide a solid seat back brace with a quick release spindle that accommodates the slotted seat back. The welds and finish of the frame are nicely done. There are two holes along the main tube for the seat base to mount using a slotted base and a quick-release spindle. Most riders will choose the back hole to drop the overall aerodynamic profile and to get a little lower so your feet have more ground contact. The seat and cranks are 28.5 inches off the ground so you sit high on the bike. I am 5'8" with a short 29" inseam. If my inseam were one inch shorter I would not be able to comfortably sit on the bike and keep my feet flat on the ground when stopped.

The front forks and rear stays are designed specifically for the narrow wheels. There is virtually no extra clearance for larger tires or fenders. The Saber is definitely a high performance road bike. The Vision frame, forks and stays are built in the USA.

##### **Paint**

Vision does a nice job with a powder coat paint and finish. My bike is pearl white. With the black seat, black cable housing, black decals and black steering tube, it looks very sharp. There are eight standard colors. Custom colors can be special ordered. The handlebar tape is done in white and gray camouflage a la Desert Storm.

##### **Steering**

The Saber comes with the standard Vision flip-it style steering tube with adjustments for length and angle. The road-type handlebars are narrow and angle down and slightly away from the rider. Initially you think you want the handlebars farther away, but once you start riding, you are most comfortable and stable with the top of the handlebars about an inch from your chest. The curved and dropped style of the handlebars keeps your arms and shoulders in tight to your body. You can play with the angle of the dropped bars a little bit, but there isn't too much room between the end of the handlebars and your knees. The handlebars are taped with padded bar tape. With your hands on the drop bars, the soft feel is like holding the leather steering wheel of a fine sports car. After riding with T-bars on my first recumbent, I think dropped bars are the way to go for longer rides. You are very snug in a Saber; the riding position is amazingly comfortable.

##### **Weight**

The Saber R64 and R65 are a light 26 pounds. The titanium R68 version is 22 pounds. The R65 and R64 compare very favorably to other bent bikes that are in the same performance spectrum.

##### **Drive Train**

The R65 drivetrain is all Shimano Ultegra. The triple crank, along with the 11-23 CS6500 9-speed cassette provide a 29-108 range across 27 gears. The chain is a Sachs PC59. Shimano Ultegra components are definitely a strong point of the R65 Saber. One of the areas where recumbents have typically lagged behind the upright market in is componentry. Because of the relatively higher price for manufacturing the frames and seats, recumbent manufacturers usually opt for middle of the road components on most models. These work just fine and do the job very well. If you are used to riding bikes with higher quality equipment though, you'll notice the difference that Ultegra provides. Shifting on the Saber is quiet and sure. Gears are smoothly engaged and the rear derailleur stays in tune. The STI combination brake lever and shifting mechanism that has been available on upper range upright road bikes for several years is a nice way to go on a performance road recumbent.

Vision doesn't ship any pedals with the Saber. Clipless road pedals are the only way to go with the Saber.

##### **Braking**

The Shimano Ultegra brakes are very smooth. If you are used to mountain bike style V brakes with the 'instant stop' style, Ultegra brakes will feel very soft. The brakes come on gradually and steadily with no squeal or chatter. The brake levers are designed for a road bike; rounded, with a gentle curve right where your fingers grip them.

##### **Wheels**

The wheels are built in house by Vision's Winkel Wheel with Ultegra hubs and Sun ME14A rims. They are of very nice quality.

**RCN Update:** For 2002, Vision has upgraded the wheel size from 24-inch, to 650c. This is a good improvement, though it makes the previous 24-inch models outdated orphans—and expensive ones at that. This is the second time that a recumbent manufacturer has

orphaned the 24-inch size (the first was RANS with the V-Rex 24/20). With the skinny tires, you will get more flat tires and fat tires are not an option for this bike—they won't fit.

### Comfort

If a Rans Stratus (my other bent) is a luxury sedan, the Saber is a fast sports car. You are very much 'in' a Saber, from the cupped Vision seat to the dropped handlebars close to your chest to your feet spinning right in front of you. It's very tight, very snug. There isn't a lot of room to move around, but you don't need to. You can get on, spin 50 miles, hop off, feel great, and get back on for another 50 miles. I've even gone for a third 50 and still felt good when I was done. The Stratus isn't far behind in overall comfort, but you tend to sit 'on' a Rans seat, particularly with the low pedal configuration of this LWB. The cockpit is much more open and relaxed on a Stratus. While both bikes get you there nicely, the Saber is definitely more intense; you feel quicker and faster, and you are.

The seat is perfect for performance riding and is great for all day and multi-day rides. The seat and crank are nominally the same height—but once you settle into the pocketed seat, your posterior is about two inches below the cranks. This makes for excellent lower back support, which gives you a very strong base for quick acceleration and hill climbing, something the Saber is very good at. High crank, low seat combinations can cause numb feet for some people on longer rides although I have had no problems, perhaps because the crank isn't too much higher than the seat.

With the tight design and narrow tires, the Saber may not be an ideal touring bike, but if you like supported tours or are a credit card tourist (i.e. motels and one change of clothes), it can work quite nicely. A rear rack could be made to fit. (See Wallace comments for another perspective on this.)

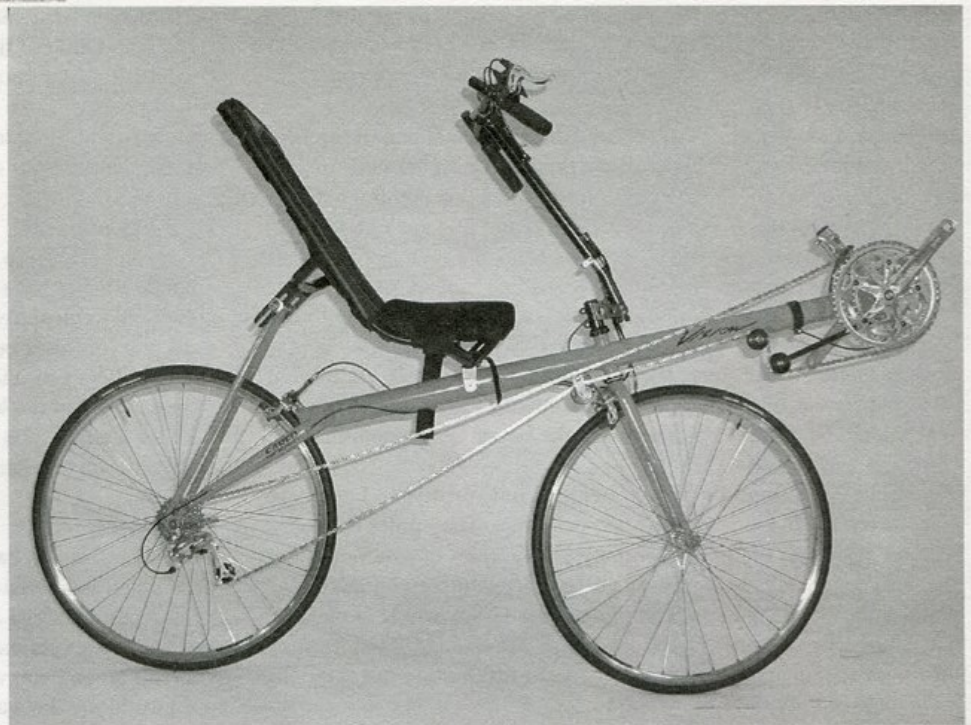
The Saber would also not be a good choice for casual family rides. Because you sit fairly high up and are more or less "poured into" the bike, it is not easy to shift around to watch the little ones, or to casually put your feet down to wait for them or to help with minor adjustments while sitting on the bike.

The bike is at its best when climbing hills or in a group of serious riders heading somewhere in a hurry. Bob Bryant commented in RCN#62 that the Saber is probably intended for "athletic build riders." While I'm not sure how well that applies to me anymore, I would agree that the bike rides well when pushed hard by a strong rider.

### RIDE & HANDLING

#### Ergonomics

In 2000, the first year the Saber was offered,



*This is the first glimpse of the 2002 Vision Saber, updated with dual 650c wheels. Note Vision's very cool new Instant-Adjust chain idler system—photo courtesy of ATP Vision*

Shimano Ultra STI shifting was the only choice. Anyone who rides a recumbent realizes that you depend on your shifting mechanism (twist grip or rapid fire) to tell you which gear you are in, since you can't see your rear derailleur while you are riding. The STI shifters on the Saber have no gear numbers or indexes. The only way to address this problem is to install a Shimano light Deck computer with shift sensors, built into the shifter/brake levers. These miniature electronic gizmos sense when you shift to show the appropriate gear number and ratio on a LCD display, along with your speed, time, etc. You don't take your hands off the handlebars to change the display on the Flight Deck computer. Two small buttons in the right brake hood control the computer functions. Unfortunately, the Flight Deck is not designed for the Saber—the wire connecting the wheel sensor to the computer base is just barely long enough to mount the computer most of the way up the steering tube, using a T-plug to hold the base. I personally like the computer display a little farther away from me so this worked out fine, but some people would probably like to have the computer display on the handlebars. I did talk to Vision about this and I understand they are working on the issue.

#### Performance

The Saber is the closest recumbent you will find to a good wedgie ride, sans the bottom, shoulder, and back pains. The bike tracks like an upright and handles road roughness well. It is very smooth and predictable in corners. Due to the short wheelbase, the bike reacts quickly if you need to make a

sudden maneuver to avoid an obstacle. Because you are higher, you see road hazards sooner and the moving hazards can see you better too. Weight is distributed about 60/40 back/front. With the large front wheel, a front shock is not needed.

As far as speed is concerned, the Saber is a blast. You can pass most recumbents with ease, slide by a lot of uprights and then join a pace line to run down the rest of them. Unless you are ready for an extreme hardback seat, a low racer, and/or a butt down, legs in the air high crank bent, the Saber is the fastest and quickest unfaired recumbent I have found. I have a fairing on my Stratus that gives me an extra couple of miles an hour cruising on the flats. I keep up pretty well with most riders, bent or upright. With the Saber, I can maintain a slightly faster speed on the flats and I am noticeably quicker when climbing hills, accelerating and reacting to terrain changes. Over my favorite 25-mile loop that has a few hills and rollers, the Saber is six minutes faster on a typical day. Low racers or high crank bents may be a little faster in a straight line (maybe!), but they won't match the comfort or handling finesse of the Saber and they can't jump into a pace line to eat up the miles and ease the workload.

Large wheel SWB 'bents have been a popular topic recently. Rich Pinto and Warren Berger (RCN #60, Nov/Dec 2000) both argue the benefits of larger-wheel bent bikes. To paraphrase their articles: "bigger wheels offer lower rolling resistance" and "higher bottom brackets give you more speed, particularly uphill." Berger, Mark Colliton and others have modified the Rans V-Rex front fork to support two large

wheels, similar to the Saber. It will be interesting to see if this style catches on in popular recumbent design over the next few years. The benefits are a nice handling bike with the specs for very good performance.

That said, the Saber doesn't follow the traditional bent design mindset that tries to get lower to the ground for higher performance. The bike may be an easier transition for riders just coming over from the upright world, since the handling and feel are very similar. If you have been a bent rider for a long time, the bike just doesn't look or ride like a bent. I've only been riding bents for three years, so I'm probably somewhere in an early awareness stage of ultimate 'bentdom. I have had some great discussions with long time bent designer gurus who believe the bike isn't designed right, meaning it is very different from what they think the ideal high performance bike should be. Many designers like the larger wheels, but they think the seat should be much lower, maybe as much as 10" below the cranks. This would lower the aerodynamic profile and increase the power/leverage you can put into pedaling. They point to the Rotator Tiger and the P-38 Lightning as examples of American bents that are recognized for their high performance, although both use small front wheels, and the Tiger has a small back wheel as well. There are also a number of European models most of them from small, independent builders, that use a 'Z' frame style to get the legs up and the butt close to the ground.

I respectfully understand their points, but still think the Saber a great bike for those that want to get there quick, climb hills well, be comfortable on long rides, and be able to be part of a group of riders. Ultra long distance races would be a great place to ride a Saber. The Paris-Breast-Paris, Boston-Montreal-Boston, or the Rocky Mountain 1200 events all require a bike that can be ridden for 1200 km (750 miles) within a 90-hour time limit. I rode the Paris-Breast-Paris ride in 1979. I wouldn't do it again on an upright, but would consider a Saber because it is well suited for this kind of riding—fast cruising over long distances, peletons, working with a partner or small group in varying terrain and weather. There are many bent bike styles that would work in these kinds of rides from a rider comfort perspective. If you are low to the ground or are long on wheelbase, you will probably be riding alone a lot and will have to deal with wind, weather and mental fatigue on your own.

Vision has wind tunnel tested the Saber and found it is as aerodynamic as an upright rider in the tucked position on the handlebar drops. They also found that a fairing didn't help the Saber's

performance since the rider is already in a laid back position and the tight positioning of the handlebars minimizes arm wind resistance. I would consider putting a fairing on the Saber anyway since I don't usually ride with the seat fully reclined, plus it's nice to have a quiet area in front of you to hold a map and keep some of the road wash off the front of your shirt.

### User-Friendliness

The Saber is easy to ride, but takes some time and effort to be smooth. The higher seat and pedals mean a high center of gravity compared to most recumbents. You will probably wobble a little until you find your center of balance on the bike. If you have ever ridden rollers you understand what I mean. The bike is not for the casual rider, but the learning curve is fairly short. Once you ride the bike for a while, you appreciate the comfort, speed and quickness and you soon become an integral part of making it fly down the road.

### Fun Factor

The Saber lets you have fun going fast, climbing quickly, riding in pace lines and cruising comfortably all day. The quality components, tight handling and quick responsiveness all help you have a great riding experience. You'll cover a lot of ground if you let yourself go and you will blow by a lot of other bents and surprised uprights along the way.

### OWNING/PURCHASING

The Saber hit the market in mid 2000 as Vision's 'image' leader. It was featured in many of their marketing efforts as the ultimate in recumbent performance riding. Despite this, sales of the R65 Saber for the first year were probably pretty light. The price (\$3,200) was undoubtedly a factor, as was the uniqueness of the design. The bike is positioned for serious enthusiasts who are looking for the comfort of a recumbent while enjoying the handling and performance of an upright road bike. This may be a narrow market today, but Vision feels it is there and will grow as high-end upright riders look for a more comfortable ride.

In 2001, Vision is offering the R64 model with a more moderate component package (Shimano 105 based) and a significantly lower price (\$1,995.) The main tube will use the 2-inch diameter aero frame steel that is standard on all Vision models this year. They also are planning to deliver on the R-68 Saber, the titanium frame version with Campagnolo Record components and a price tag of \$4,990. This year you have the option to change the handlebars on the R64 and R65 from the curved drops to a raked T-bar. I like the dropped handlebar style, but the T-bar will give some riders a little more room to work with. T-bar bikes will use 105 XTR rapid-fire shifters, which have the gear numbers on the shifters.

### Quality/Durability

With the Vision built-in-the-USA quality and fine Shimano Ultegra components—the Saber is an excellent package.

### Cost/Depreciation

The R65 Saber with Shimano Ultegra components is priced at \$3,200. This is a high priced bike. When Vision does lower the price the 2001 R64 with 105 XTR components is \$1995. The R68 Titanium is \$4,990, with Campagnolo Record components.

The R64 will be competitively priced with several other high performance bikes. If you can afford the R65 or R68, you don't need to worry about the depreciation, just enjoy the ride.

### Options and Accessories

Add a Vision gear bag to the back of the seat and get a hydration system (or use the Vision version) as there is only one water bottle mount. You can carry two water bottles in the side pouches of the gear bag. If you like the drop handlebars, get the road brake lever/shifters and the flight deck computer. There is no good place on the

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bike for a rear view mirror—go with a wire clip-on type attached to the helmet. Don't do a kickstand—a standard one doesn't exist anyway. A rear rack would be a possibility with a little finagling.

### Market Competition

There is no direct head to head competition with the Saber for the market. Vision is aiming the bike at, unless it's high-end upright road bikes (yet-Ed.). The P-38 Lightning and Rotator Tiger have been around for a while and could offer comparable straight line performance, but the Saber's finish quality and components are much nicer and with the larger wheels, the ride is smoother. Low racers, the Aero Cycle, or the 26" ZOX would be considerations from a straight ahead performance perspective, but the narrow, hard back seats won't have the comfort of the Saber for longer rides.

### Verdict

If you can't afford a Porsche but like the idea of bombing around the countryside in a hot set of wheels, get a Saber. If you've already got a Porsche, get a bike rack and a Saber. If you're a bent designer guru, you probably won't like the Saber, at least at first. If you are a serious enthusiast coming from the upright world, or aren't sold on riding low, the Saber could be for you. ♦

### Rating/Summary

#### Comfort: A

You are a part of the bike, but it takes some practice to be smooth. Some riders don't like the Vision seat horn.

#### Design/Style: A

Very distinctive, very tight, right now a one of a kind bike.

#### Chain Management: B

Pretty good for how far it has to go. You may experience some chain slap when you first ride the bike but as you get smoother, the slap goes away.

#### Brakes/Braking: A

Ultegra components do the job nicely.

#### Finish Quality: B+

A Nice paint, well put together.

#### Overall Rating:

When ridden fast and hard with a group or on your own: A+

When used as a general purpose bicycle on a family ride by a short casual rider: D-

#### For

Very quick, strong hill climber  
Very comfortable, snug



The author's dual 24-inch Saber

Handles and tracks smoothly  
Works well in a group  
Good transition from the upright world  
Excellent for long, fast rides

#### Against

Not for short riders  
Expensive  
Not for the casual rider  
Odd size wheels  
You need the flight deck computer if you want the STI road shifters

#### Specifications

Model: R65 Saber  
Manufacturer: ATP Vision  
Type: SWB/ASS  
Wheelbase 39.5"; Seat height 28.5"  
Bottom bracket height 28.5"; Weight #26  
Frame: 4130 2" Dia CroMo; Components:  
Shimano Ultra triple crank; 11-23 cassette;  
SRAM PC59 chain; Wheels: 650c; Rims:  
Sun ME14A 32; Tires 1-1/8 Colors-several  
choices and custom colors available

#### Comments from Jim Wallace, Fayette, Alabama

(another Saber owner):  
The R-65 puts a whole new meaning to riding a recumbent up a hill; you can actually ride with the pack at a fast pace or ride comfortably at 3.5 mph. My experience has been with BikeE, Vision R-45, Rotator, YellowBike dual 26" wheel Optima and a friend's Gold Rush. All great bikes, but for fast riding with the pack or on hills the R-65 is the best.

My bike is set up to do light touring. I



plan to ride it to San Diego from my home in Fayette, Alabama starting on April 21. The added or changed components for this tour include fenders, rack, 11-32 cassette and a fairing from my R-45. The fairing from the R-45 fits this bike fine and is great to have in the rain. The fenders are jury-rigged but functional. Stainless steel hose clamps are used to attach the rack to the back of the seat brace. ♦

**Note:** This article and additional comments were originally written about the 2000/2001 dual 24-inch wheeled Vision Saber. In late September, we heard that Vision had changed the wheelsize for 2002, so the article was updated by RCN.

# Anatomy of the Recumbent Selection Process

Here it is, a “non-typical” review, involving email correspondence between an inexperienced recumbent rider buying a bike, and his more experienced friend...

**Dave:** is David Bengston

**Jon:** is Jon Roesler

**Dave:** We have until the end of June to use our free rental coupon for Calhoun Cycle. I don't want to waste it—how about you? Is there a time in the next few weeks that you have free to bike around the lakes?

**Jon:** I'm going to try and buy a 'bent before I leave on vacation on June 30th. I have a grant renewal application due in the mail today, so I can then relax a bit. I'll be going over to Calhoun Cycle next week...

I want to test ride the Vision Saber, the Rans V-Rex, and the Lightning P-38. I would also have liked to test ride the Haluzak, but I don't think Calhoun Cycle carries those.

Conceptually, I like the Saber the best, but I need to see how it feels. So maybe I'll get some riding in without using a coupon.

I'm taking a comp day next Tuesday, so I hope to get into Calhoun Bike at that time.

**Dave:** I ended up stopping by Calhoun Cycle on Saturday to pick up some new tires for my work-related trip to Duluth in a few weeks. I noticed that they had a Saber in the window—looks nice! But it also looks like you need long legs to put your feet down at stops. I think you should also check out the Rans V2 when you're there tomorrow. Not sure if they have one in stock. But it might be a better all-around bike—fast, but also a good commuting bike. Good luck! Let me know what happens.

**Jon:** I spent a couple of hours riding 'bents yesterday at Calhoun. You might have some reactions to my comparisons. It's my way of comparing a couple of bikes.

I rode the Vision Saber R64, the Rans V-Rex XL, and the new Burley Limbo. I was going to try a P-38, but Calhoun Bikes no longer carries the Lightning line (that's fine; the P-38 is probably out of my price range at ~\$2600).

The Vision is higher. It makes a difference when stepping in and out of it (that wasn't good). I also felt higher when waiting at a light to make a left hand turn (that's good). I had no problem with planting my feet, etc. with the Vision seat height. I think I preferred the Vision.

The handlebar setup on the Vision, with the Rapid Fire STI Shifters, is significantly superior to the Grip Shift. I definitely preferred the Vision.

The Burley was the worst at hill climbing. The Vision & Rans were roughly equivalent, but different. I think I preferred the Vision. The gearing on the Rans is a bit lower, so I spun a bit more. This is a tough comparison. But the Burley definitely came up third.

The ride felt crisper on the Rans (benefit of a triangulated frame?). I think I preferred the Rans. But would I after a century?

When making a sharp turn when riding super slow, I nicked more of my heel w/ the Vision, but I nicked my heel w/ all of the bikes. I think I preferred the Rans.

I felt myself sliding off the seat with the Vision, with the seat in the most upright position. With a second ride, Luke lowered the seat

incline, and I didn't notice the slippage. The Rans seat was totally noticeable (that's good). I think I prefer the Rans.

The Vision was “twitchier” (or more responsive!?) in terms of steering. There is also a learning curve going on here, as I'm not a regular bent rider. Is this good or bad? The wheelbase on the Rans is 3.5 inches longer.

The Rans cockpit felt roomier (I liked that), but that might be a function of how far the handlebar was set back. I'll try fiddling w/ the handlebar angles when I go back.

A rollerblader commented, “cool bike,” while I rode the Rans.

I like the feel of narrow tires on the Vision; that's probably because it feels like my current road bike. The Rans is \$1620. The Vision is \$1970.

Both have quick-release seats. I'd probably have to remove the seat to get it to fit in the bike locker. I need to go back and try doing the quick-release on both of them myself (Luke showed me yesterday).

The Burley ride was good, but it wasn't at the same level as either the Rans or Vision. It's definitely out.

I couldn't tell, on the course I rode, which bike was faster. Again I'm dealing with my 'bent riding learning curve, which makes it hard to tell some of these things.

The Vision is supposedly faster. It is supposed to be more aero, and there is no idler on the drive side of the chain (the Rans has one idler). I never really opened up on either, and I didn't have a speed comparison. The Vision wind tunnel tests are impressive; I couldn't find comparable Rans wind tunnel tests.

I had some chain slap on my right calf with both bikes. I had that when I rode your Rocket as well. There's probably a learning curve that goes with this. Vision does have a chain guard as an option.

Any reactions?

**Dave:** Thanks for the test ride reactions. Very interesting. My comments:

The heel interference problem is disconcerting at first, but after a while it's no longer a problem—you instinctively know when it might happen and avoid it by gliding through tight turns. Tight turns and low speed maneuverability are not strengths of any recumbent.

Vision tends to have a very laid back seat angle, which makes it harder to look over your shoulder in traffic. I used to have my Rocket seat pretty laid back, but made it more upright so it's easier to look over my shoulder—but it's still not easy! I've learned to depend on my rear view mirror much more than I do with an upright bike.

I still think you should test ride a V2. You may fall in love with it. If it doesn't fit in a bike locker, you'd have to lock it at a bike rack (like most of us!). I think you mentioned something about your office moving again, didn't you? If that happens, will you have bike lockers at the new location? You may find that the hassle of taking the seat off and on to fit it in the bike locker is too much, so fitting it in a locker may end up not being an important factor.

Your comments on the Burley confirm what RCN said about it—a nice bike, but not a performance bike.

Between the Saber and V-Rex, my guess would be that the Saber may be better for long-distance riding, but the V-Rex is probably better for all-around riding (commuting, long-distance, recreational). The greater twitchiness of steering is a concern with the Saber.

There's definitely a learning curve, and with time you learn to not oversteer so much. But I think the twitchiness is a safety concern, especially when commuting in traffic. Let me know what you decide

**Jon:** Thanks to your encouragement, information,

guidance, and discussion, I bought a bike this weekend!

I went to Calhoun Bike Shop thinking that both the V-Rex and the Saber were excellent bikes, and that it would be hard to go wrong either way. It would boil down to some preferences and some biases.

The Velocity Squared seemed to be too much bike to be my main commuter. I was looking for something smaller. I wanted to have half-a-hope of putting the bike in a locker. There was no way the V2 was going into a locker. So I didn't even test ride it.

I came to Calhoun Bike Shop with the measurements for my bike locker. I mapped it out on the parking lot, and then I measured both the V-Rex and the Saber. Neither was going to fit in my bike locker without taking off the seat. The seat on the Saber comes off with the flick of two quick-releases, which is a lot easier than on the V-Rex.

As the two bikes were sitting beside each other, I saw how much higher the seat on the Saber was than on the V-Rex. I liked the height for commuting.

My wife often picks me up at work, after I've ridden in, and we go out for dinner. Although I have a hitch rack, it usually is in the garage while the rooftop rack is always on the van and definitely more convenient for bringing my bike home. I tried out the Saber on the roof rack, and got it to work with a front-fork mount. With its quick release seat, it went up with the least amount of hassle. OK, now you know. I went for the Saber.

Luke set it up for me in a couple of hours. My concessions for commuting were a front blinky and a large seat bag (with a blinky) for my briefcase/fanny pack (which I use with my "regular" bikes). A pump, pedals, a couple of water bottle cages, three spare tubes, and a spare tire, and I was off. With tax, it set me back \$2372. Ouch!

As I rode in to work this morning, I was thinking about how the V-Rex might have been different. It was a perfect morning for commuting w/ the Saber. The pavement was dry; the sun was shining; traffic was light.

I did experience a little bit of chain slap on my leg, more than perhaps I would have experienced w/ the V-Rex. I do like the height of the Saber. The Rapid Shifters with the Saber handlebar are definitely great. I noticed the seat, perhaps a couple of times (especially the horn). Not that it was a problem. I just noticed it. But I don't think that I've ever noticed a Rans seat during any of my test rides.

The aerodynamics were great, as I biked into the wind. I also made the 10-mile trip to work in very short time, in spite of taking it easy (as I'm still a beginner 'bent rider). I rode it down Ramsey hill. Wow! As soon as I would let off the brakes, that machine would rapidly accelerate. To get the best aerodynamics, I assume that you need to have the seat in the most reclined position. I had it that way yesterday, when I was showing off my bike in the alley. This morning my wife made me promise that I would ride to work, at least today, with the seat in a more upright position. She doesn't necessarily like that laid back look. I think that she's concerned that I will go too fast with this bike.

When I got to work, I was able to get the bike in the locker by popping off the seat and putting the bike in backwards. The seat fit in the locker as well.

When all is said and done, the V-Rex, dollar for dollar, is probably the better value for the ride. But my preference was for the Saber, and with the quick-release



*Jon Roesler on his 2001 Vision Saber R64 and David Bengston on his Rans Rocket photo by Luke Bengston*



*Jon Roesler with his new Vision R64 Saber*

seat, even at \$350 more than the V-Rex, it was the bike for me. It definitely works better for my commuting.

I leave for a week of vacation on Friday. The bike comes along, as I go riding just about every day. I'm looking forward to my fast rides with the Saber. The ride back to camp is usually against the wind, and my back usually is really bothering me by the time I make it back. I'm looking forward to seeing how a 'bent can reduce the aches...

**Dave:** Congratulations! Sounds like the right bike for you. I didn't realize how easily the Vision seats pop off. That is nice. I hope you can get in some miles at family camp—I think this is the kind of bike that begs to be ridden relatively long distances, so it will be a nice time to get used to it. It does take some time to get used to the different riding position, balance and steering. Do you have a rear view mirror on the handlebars? Not sure if Visions come with that. Or maybe you'll be able to continue to use your helmet-mounted mirror? Does that work as well in the different position? If not, you might want to consider a handlebar mirror.

One thing you can do for the chain slap is to put a tube over the top chain. I considered this, but never got around to it—I've learned to be more careful.

I think the tube makes a slight noise with the chain running through it as you ride, but it's not bad.

Have fun with it! Don't rush the learning curve—take your time getting used to the bike. Let's go for a long Saturday ride later in July. ♦

# The BikeE E2

## An Affordable Recumbent Tandem

by Mike Librik

info@easystreetrecumbents.com

The BikeE E2 is a unique tandem that makes a bold design statement. What you may not notice right away is the exceptional value and quality of this new recumbent tandem.

I should make clear from the beginning that I sell BikeEs. I would not write this review if I did not consider the E2 a good bike for the right people. The point here is to help these people recognize what they want, and should they get an E2, what they must be aware of to enjoy it to the fullest.

### SYSTEMS

**Frame and fork**—The E2 uses a custom wider extrusion than other BikeEs. It is like a two-seat RX. The seats fit and adjust exactly the same. The frame is a different extrusion than the singles, and the swing arms look beefier, though the real quality of a weld is often hidden below the surface. It has a mid-drive bracket like the RX, though not interchangeable with it. The headset is the same 1-inch oversize Aheadset found on every other BikeE, as are the rigid handlebar risers. The ability to hoist oneself somewhat out of the seat and hang off the handlebars is one of the features that makes this, or any BikeE, fast off the line. In city traffic, where standing starts and dashes across arterials are the norm, this is a superior design.

The rear suspension works as well as it does on other BikeEs. Ours has given us little trouble, but this may be because of the light cargo loads we've managed to mount. Should a gasket fail on the AD-5 air shock, you must have the \$15 gasket replacement kit and qualified technician handy—and don't forget the shock pump. There is no front suspension on the E2. There has been talk of a suspension, but so far nothing has materialized.

The reverse-facing CroMo forks have disc brake mountings on them. The reversed-rake forks have a profound effect on the ride. More on this later.

**Seat**—The BikeE seat is fine and works well for its purpose of sitting you upright. It cannot recline as much as other seats, but unlike other SWB ASS bikes, you don't need to recline the seat and handlebars for better handling. The upright seat back gives better leverage for accelerating or climbing. The thick anodizing on our E2 interfered with easy seat adjustment, but I partly remedied this by filing the plastic spacers that clamp onto the frame. After lots of miles, the captain's seat back fabric has stretched to the limits of its adjustability. Like many new seats, it has vertical nylon belts reinforcing the side of the seat fabric. Like all recumbent seats, the seat frame needs more places to attach taillights. High on the seat back is the logical position, but there is little exposed tubing. I succeeded in rigging two xenon strobes to the back, using MTB bar ends, but the mounting is not wholly satisfactory.

**Drivetrain**—The ESP drivetrain works well. The stock gearing on the E2 is a custom BikeE tandem crankset with 32/48/58 chainrings, mounting road bike-sized chainrings (130 mm and 94 mm) on a mountain bike-type crank. Should you wish to customize the gearing, I recommend that you buy individual chainrings and install them instead of getting a replacement crank.

The chain is SRAM, like the other high end BikeEs. The 8-speed rear cassette is geared with 11-32 teeth. The freehub will allow for a 9-speed conversion. More importantly, the ESP 7.0 rear derailleur

will allow for a 34-tooth low gear cog.

**Shifting**—The tandems we have owned usually had problems shifting onto the lowest chainring. This bike was no exception, but using a 127 mm bottom bracket solved the problem. The Shimano LX front derailleur, apparently pulled right out of the RX parts bin, does the job, surprisingly enough, even under load. ESP rear derailleurs have always been easy to use on these long bikes. The 7.0 on our E2 is easy to tune and isn't bothered by long cable runs. Cable routing is managed by deep grooves built into the underside of the frame, firmly holding a single length of housing. The cables wear well. More housing but less work is required to overhaul the system. I think BikeEs have smart cable management systems.

**Chain Management**—You tension the timing chain by sliding the stoker BB assembly back (loosening 8 awkwardly placed bolts under the seat). Once these bolts are loose, have one person hold the handlebars while the other clips into the stoker's pedals and pulls the mid-drive back, tightening the chain. Then it's back under the bike to tighten those bolts. The best indicator of chain looseness I've found is to eyeball the top chain's clearance over the idler when the bike is stopped. It clears by about 2 cm when tight. I've let mine sag to the point of contact without incident, but BikeE considers that lucky. The timing chain adjustment ought to be easier on this bike—an eccentric tandem bottom bracket would be a nice upgrade.

**Braking**—The ESP 7.0 V-brakes on our test bike are good stoppers. A Shimano Servo-wave or Avid Speed-dial would be a good upgrade to add some braking leverage to compensate for the long cable. For 2002 disc brakes will be standard. BikeE is planning to use AVID brakes.

The little wheels heat up more than their larger counterparts. A word of caution is in order for any tandem duos descending steep mountain passes. A drag brake is usually necessary, but will not fit on the E2.

**Wheels**—The small 16-inch 305mm front wheel needs to be very tough to withstand tandem usage. The first run (about 5% of production/50 tandems) of E2s had rim problems which resulted in failures and blowouts. Ours began to crack at the tire bead around 1000 miles, evidenced by a rhythmic scraping sound. The front rim and tire fit was not optimum, and at high pressure with a tandem load, the problem arose. BikeE found and corrected the problem by adjusting both the tire and rim tooling. BikeE dealers and possibly even high mileage riders may want to keep a replacement rim/wheel handy.

The BikeE E2 front wheel formerly had 16-spokes (half spoked 32-hole rim). For 2002 a full 32-spoke wheel is standard equipment (shipping as of August '01).

The E2 rim is made for BikeE and is a double-wall construction with a machined side wall. BikeE also commissioned the 16-inch 305mm Hookworm Maxxis tire.

BikeE has also started using stronger spokes (13/14 gauge). I plan on refitting mine as soon as it is available. Kudos to BikeE for initiating the use of the 50-305 rim.

Of minor note, the rough finish of the SRAM 7.0 hubs is difficult to clean. I like both the solid look and the feel of the wide rims and Maxxis tires.

I like everything about the Maxxis "Hookworm" tire except its name. In conversation, I call it "the Maxxis tire." BikeE did all of practical HPV design a good turn by commissioning the 16" Maxxi



After over 1500 miles, the sidewalls look quite fresh.

**Centerstand**—The long-promised centerstand has finally arrived. The clamp-on kickstand sold for other BikeEs is not recommended, but this hasn't stopped some owners from using them. The center-stand is important for users who are trying to load cargo and lock the bike in public places. Should one try to make do with leaning the bike against something, the reversed rake fork can spontaneously rotate up to 270 degrees. "Crash, smash" goes the bike. The E2's spontaneous diving while standing propped up has injured me once. It has come close to falling on my wife, saved only by my vigilance. Buy the centerstand. Dealers wishing to show this bike will want one to avoid unnecessary embarrassment.

Even with the centerstand, the bike suffers some parking stability problems. With the stand on the front wheel, a slight imbalance tips the stand onto one point, and the steering starts turning. Once the steering is turned 90 degrees, the bike falls. To solve this problem, I have built a simple device for locking the steering when parked. The centerstand's design is simple and seems rugged. It will not swing up automatically when the bike is lifted, making it easy for one person to move a parked bike sideways.

## ERGONOMICS

**Comfort**—If your spine demands a very reclined seat, the E2 won't work. The design of this BikeE model requires an upright riding position—even more so than the other BikeE models. The vertical head tube allows for straighter elbows than other SWB ASS bikes. While we mostly do shorter local jaunts on the E2, the few 50-mile days we've done have not become uncomfortable. I'd be willing to ride it further in a day if the need arose. The handlebar grips that came stock were thin, knobby, and uncomfortable, but replacing these did not break the bank.

**Riding Position**—The upright position and low cranks give easy access to the ground, even for a 28-inch inseam like myself. I can keep my lower back braced against the seat when stopped, which facilitates fast starts. The handlebars set the rear view mirrors at an easy place for monitoring pursuing traffic without too much head turning. Turn signals will block one's view in these mirrors, though. Also, mirrors on the stoker's bars should be oriented downward to keep them from interfering with the captain's view behind.

The stoker's seat is higher than the captain's, and it is difficult for stokers to plant their feet on the ground. This doesn't normally matter, as it is better for the captain to manage the stops. This leaves the stoker clipped in and ready on the power. The stokers handlebars adjust for height like any



BikeE's bars, and they slide on the frame to adjust for reach. There is room for all kinds of gizmos on them, such as a xylophone or laptop.

**Handling as a Vehicle**—So what about the reversed forks? As the bike is steered from center, the frame dips. The stoker's mass, set rather high, acts like a pendulum to dampen the steering. Without a stoker, the front wheel springs more quickly to the side. Within a few degrees of center the steering is very light and easy to keep a grip on, even one handed, at speed, on rough roadway. When steering, don't focus on what is directly ahead of you, but the space beside it. The bike will drift off course in that way, but in a controlled and predictable manner.

The E2 will thread its way through narrow apertures and angles, or into sharp, right angle turns in narrow intersections and sidewalks. U-turns are easy on most streets and are not impossible in alleys. The handlebars swing in an arc that is easy to keep a grip on. Even in extreme turns, control is so precise that one's concentration can stay focused on the turn, the traffic, or on modulating the bike's acceleration. The bike can cruise at under 2 mph to best use available room. On crowded multiuse trails, one can give pedestrians lavish amounts of space. The bike will creep over soft, unpaved areas and rocky ground. This auxiliary all-terrain ability has simplified some tricky situations. When starting from a stop, one should choose whether to veer left or right. I often start the bike pointed off course and use the stability of the veering during the first pedal stroke. The dipping of the frame entering a turn might help maintain forward momentum. The bike's stability at low speeds aids crossing blind intersections, as it can be held upright, all

feet on pedals, at nearly a standstill, to creep into the intersection, with full attention to traffic, ready to stop or accelerate instantaneously.

The bike is surprisingly stable at high speeds. Should it happen that on a fast descent, on rough road, surrounded by passing traffic, your helmet starts slipping, or your nose starts itching, you will have to pilot the bike one-handed over a precise, predictable course amid swirling traffic. The E2 can do that. With the stoker's security resting in the captain's hands, captains should take note. Novice captains should expect to wobble and veer when they first start riding, especially at higher speeds. It is easy to recover from a veer, and it does go away.

The stoker's high position makes them accelerate sidewise during the bike's quick turning. When I bravely stoke for enthusiastic novice captains, I am tossed one way as the bike veers the other way, but then the captain calmly steers deep into the turn and bounces me up to center before we lunge the other way, on down the street. The stoker needs to get used to this, and the captain should be aware of the difference in experience for themselves.

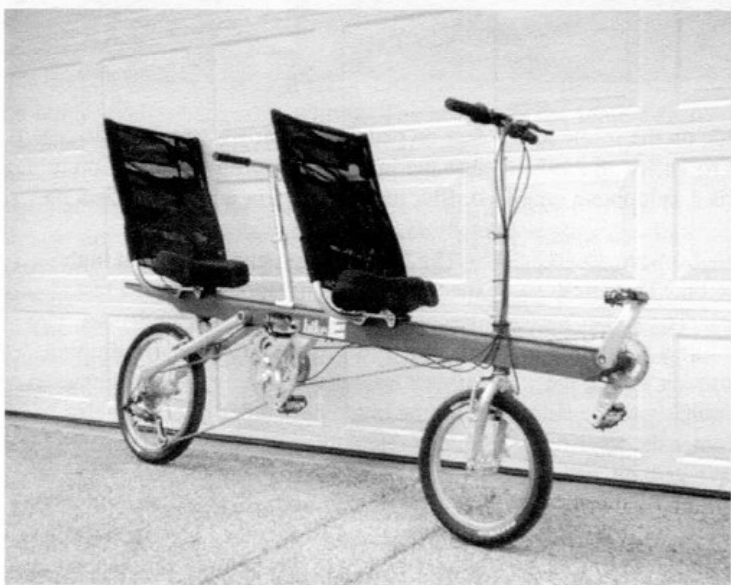
**Handling as a Pedestrian**—The rigid handlebars for both riders and the horizontal seat braces provide plenty of places to grab and lift the bike. The front wheel can be compactly turned past 90 degrees, letting one turn the bike in tight space. The advantages of the captain's rigid steering riser are many. Great force for lifting and pulling the bike over bike racks or obstacles can be applied to it, unlike bikes with tilting risers.

## OWNING/PURCHASING

BikeE E2s are almost always in-stock and



12-year old Amy Bryant and 9-year old Daniel Bryant ride the RCN E2 test bike



Our 2001 E2 was a blast to have around and problem free

ready to ship immediately. No waiting for a BikeE.

**Versatility**—Our biking is primarily urban, destination-oriented trips. Easy starts and stops and precise low-speed maneuvers are key, as is rapid acceleration off the line, all of which the E2 does. As a tandem it is faster than two separate cyclists, so it is good for suburban and exurban trips where bigger roads are unavoidable. In traffic, it is always easier to manage one vehicle instead of two in a formation. While my wife and I mainly use CTs during the work-week, when we go somewhere together, we always take the E2, unless cargo capacity is an issue.

**Cargo**—Cargo capacity is a problem on tandems. While only one bike's supply of parts and tools needs storage on a single, two people's personal gear and shopping must be stored on a tandem. Our E2 handles more cargo than any other tandem we've had. It is the ULTIMATE touring tandem. Vision day bags fit over both seats, and a BikeE day bag fits on the stoker's seat. I got a rack under the front seat by using an old-style (not Sweet Seat) underseat rack, mounted backward, clamping the rear skewer through a universal mounting bracket and the front skewer through the seat base adjustment slot. This interfered with neither the pedaling nor the steering. A rack will go under the stoker's seat backward, on the rear seat skewer and another mounting bracket behind the seat. It puts a lot of weight behind the rear hub, though. Tall stoker settings should use an old style rack, as it is more compact. I had to remove the

safety rivet set in the frame to mount this rack. I am very pleased with all this cargo. Lack of cargo carrying capacity cramps versatility, and versatility is the BikeE's greatest strength.

The BikeE underseat racks will not work. The bike can tow a BOB trailer or a Bike Friday trailer, but I hope underseat racks will appear someday.

**Shipping/Assembly**—Buy your E2 from a competent dealer who has experience with this model. The threadless headset, ESP shifting, and linear-pull brakes are all easier to set up than their predecessors.

**Transport/Storage/Locking**—I cannot offer tips on loading this bike onto a car, as I do not use one. BikeE tells me that a Yakima roof rack with a trunk mount will work. If you have the centerstand the bike can be stored more easily. Without a steering lock, one should be careful moving things around the E2, as a slight knocking about will send it crashing over. As the bike's front end can be easily lifted, the front wheel can be laid over a bike rack. My usual lock for all my bikes is a Kryptonite Gorgon heavy duty cable, which will tightly secure the frame and front wheel to a rack. Sometimes only the frame can be locked to the rack, meaning a steering lock should be engaged to assure stability when jostled at the busy bike rack.

**Quality/Durability**—BikeE does not offer a lifetime warranty as some other manufacturers do. The warranty is five years on the frame. BikeE supports its dealers when the inevitable problem arises. If possible, find a dealer with spare parts so that any warranty replacement can be done on the spot without waiting for the parts.

BikeE has had some early Sweet Seat failures. This was caused by a production method glitch where the lower seat frame joint was not getting welded all the way around. Some of the Sweet Seats broke. The problem seems to have been solved, but inspect your seats to make sure the weld is not cracked.

Parts quality is a factor in the bike's price, and upgrades during the first couple years should not surprise anyone. Tandem drivetrains take a pounding, especially with synchronized pedaling, which is best for fast starts. Our seat base fabric is ripping after all the falls took prior to our acquiring the centerstand. The brakes, shifting, pedals, headset, and the chain have given me no trouble after many hundreds of miles and minimal attention. I've had mixed results with Jagwire cables, and upgraded mine to Shimano.

**Options & Accessories**—BikeE has the best line of accessory items of any recumbent manufacturer around: tires, bags, pannier racks, a computer, shock pump, frame accessory mounts and there are 3rd party accessories as well (not all listed here will fit the E2).

## ANALYSIS

**Value/Depreciation**—As the E2 is the best handling tandem I've owned and the lowest priced as well, I consider it a very good value. Very strong riders would probably want to upgrade the drivetrain components. The lack of a lifetime warranty may dissuade some people. I cannot guess what shape my frame will be in after 20,000 miles, but I will try to find out and let you all know when we get there.

**Market Competition**—There is nothing even close to the E2 in price or quality. The Screamer and Double Vision are nearly twice as much. Going strictly by price, I haven't owned anything as reliable without spending twice as much money.

**Verdict**—For the kind of riding I do, urban, destination-oriented, all weather, usually with cargo, this is the best tandem I've found. You might find it a useful device for reducing your automobile use.



*Mike Librick runs Easy Street Recumbents in Austin, Texas with his partner Amy Babich. Tel. 512-453-0438  
www.easystreetrecumbents.com*

## For

Easy to afford  
Stable at starts, stops and all speeds  
Fits a short captain  
Best tandem if you have kids  
Easy to lift and walk  
Confident though unique handling  
Very maneuverable

## Against

Goofy looks  
XL-sized stokers need not apply  
Primitive chain tensioning system  
Falls over easily without centerstand  
Shorter warranty than other tandems  
Lack of cargo space typical to tandems  
Front wheel and shifting problems (first E2s)

## Rating/Summary (by RCN)

Comfort: B+  
Design/Style: B+  
Drivetrain: B  
Chain Management: B  
Brakes/Braking: B  
Finish Quality: B+

## ACCESS

BikeE Corporation  
5125 SW Hout St, Corvallis, OR 97333  
Tel. 800-231-3136; Web: [www.bikee.com](http://www.bikee.com)

## Specifications

Model—BikeE E2  
Type—Tandem SWB style ASS  
Price—\$2295 (2002)  
Wheelbase—56"; Seat height—24.5-26.5"  
(Captain)/27-28" (stoker); BB height—20"  
(captain)/ 15.5" (stoker); Weight—57  
pounds (we weighed); Frame—TIG  
aluminum extrusion with CroMo fork and  
rear suspension swing arm; Suspension—  
Cane Creek AD5 Air, 2.5" travel; Seat—  
BikeE Sweet Seats (2): mesh back, foam  
base; Fits Riders—4'8"-6'2"

## Components

Crank—BikeE tandem; Headset—Aheadset  
OS; BB—NA; Derailleur(s)—SRAM ESP

7.0 (r), Deore LX (f); Cassette—11-30-8-  
spd.; Chain—KMC; Gear inch range—NA;  
Pedals—Wellgo LU 981; Wheels—406mm  
20" x 1.75 rear/305mm 16" x 1.5" front;  
Rims—Alex DM124; Tires—Hookworm  
Maxxis 1.95; Hubs—ESP 7.0; Brakes—ESP  
7.0 V-brakes and handles; Colors—Blue

## Editor Comments

*The BikeE E2 is the only affordable family oriented recumbent tandem. It also makes a bold design statement with its somewhat unusual looking reversed direction fork. Some feel that it is a controversial design. We have heard it called the VW bus of recumbent tandems. The design is also a departure from BikeE's CLWB designs. The E2 is really an SWB/CLWB tandem.*

*Our test bike arrived in the Spring of 2001. It went together smoothly and was rideable in 30 minutes. We had no problems with set up or dial-in and our E2 operated flawlessly during our review time. The quality of this Corvallis, Oregon-built BikeE was very good—perhaps as good as tandems costing nearly twice as much money.*

*The E2 was definitely the most popular test bike we'd had in some time. My kids Daniel and Amy (9 & 12) mastered the E2 in a few minutes and had lots of fun with it. Most any rider combination would work for our family, with the exception of me as stoker (XL sized stoker on E2=bad idea).*

*The E2's reversed fork is odd and takes some getting used to. However, when you ride the bike, the handling (especially low-medium speed) is easy and user-friendly. It doesn't take as much effort as one might think to track a straight line (though there is some slight side-to-side pull going on—depending on the weight of the riders). To turn, you just release some pressure on the bars and the bike kind of glides through the corner. When you make a turn, the E2's very upright steering column, fork, and front wheel pull you into and through the corner. The heavier the rider, the more pull there is. None of us found this to be a negative trait,*

*however, nobody was interested in attempting high-speed descent testing. I did swing the fork around in the "normal" direction and tried to ride the E2, but there was dramatic heel interference, and it quickly became apparent that it was a bad idea.*

*Dealers and owners who may have had shifting, front wheel or even seat problems with the first batch of E2s should note that all of the problems seem to have been taken care of. Some dealers still seem to have a bad impression of the E2, perhaps based on those early experiences. Despite these negative views, reports are that this is the best selling recumbent tandem ever (removed over 1000 units so far).*

*There has been other discussions of the following items online:*

**No trail**—Again BikeE's bold design move. My kids are riding it with no problem, and I liked it, but you'll need to make up your own mind after riding one.

**Near vertical ASS riser**—We've heard reports of owners adding the Top Loader stem and RX bars with good results.

**Concern over 16-spoke front wheel**—The 2002 model will have 32 spokes. The beefier wheel is retrofittable.

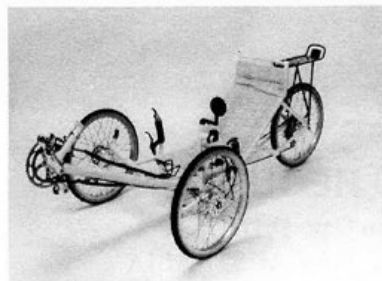
**Rim Brakes heating up**—The 2002 model will have disk brakes standard. Unfortunately, a drag brake is not adaptable.

**Other problems**—I don't know, our Spring 2001 test model was near perfect and trouble free.

*We did have a few problems with our RX test bikes that utilize some of the same systems. One of our Cane Creek shocks seal blew out after 20 miles on one RX. BikeE shipped a new one right away. BikeE says less than 2% of BikeE shocks fail.*

*Another problem we had was premature brake wear. The ESP 7.0 V-brakes wore out in <500 miles over 3 months of summer*

# WICKS AIRCRAFT SUPPLY

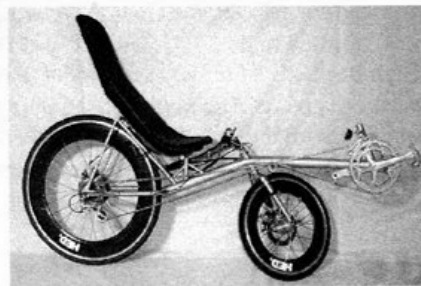


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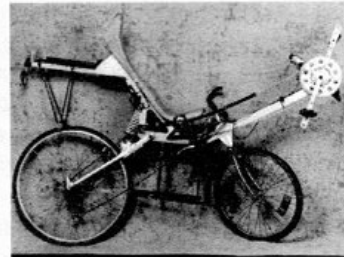
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season riding. The bike never saw the rain, but I do ride some bark/natural ground cover dry trails (though this should not be a big contributor).

Many of the "hvy racers" and enthusiasts who buy \$5000 recumbents are not really the market for the E2. Consider that the E2 is a VERY high quality recumbent for about half the price of the competition. It will be the best choice if you have kids for stokers or if you are not sure just how much your family will use a tandem. Anyone skeptical of the E2 should find the nearest kid (or a non-cyclist wife) and go for a ride. You may just then understand the inner beauty of the E2.

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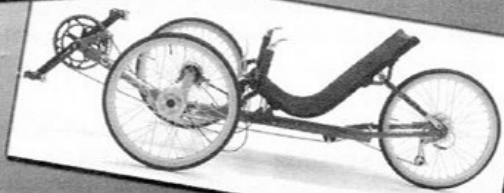
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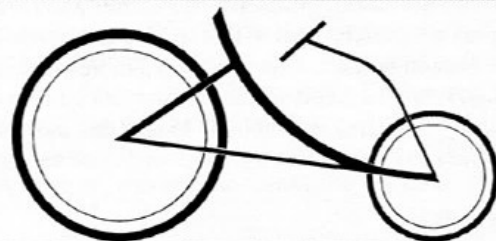
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# *Reader Review:*

## **Barcroft Dakota**

by Paul Kern  
krisnpaul@earthlink.net

The Barcroft Dakota and Virginia GT are performance-oriented short wheelbase (SWB) recumbents that offer the enthusiast a fast, comfortable, and good-looking machine. Bill Cook is the man behind Barcroft, and together with V-Rex designer Mark Colliton, came up with two models that overcome many of the drawbacks inherent in SWB designs. The Virginia GT is about 1.5" lower to the ground than the Dakota, and is slightly faster. The Dakota offers more frame clearance for fenders, fat tires, etc. I decided to go with the Dakota, and while the rest of this article references the Dakota, it applies to the Virginia GT as well.

I came across Barcroft Cycles while surfing the Web in search of a high-performance replacement for my BikeE AT 3.0. The BikeE is a fine entry-level bike and is excellent for commuting. However, I live in Silicon Valley, and mainly do rides in the Santa Cruz Mountains to the ocean. While it's possible to push the BikeE up these hills, I was not able to keep up with my fellow cyclists on uprights.

My goal was to find a high-performance bike that could climb well, and also be comfortable enough for double centuries. I also wanted to avoid long wheelbase (LWB) designs, as they are difficult to store and transport. The last goal was to find a company that would allow me to mix and match parts, as I had a clear idea of the components I wanted. Bill Cook, founder of Barcroft Cycles, was very accommodating and worked with me to meet my specifications. I now have about 1200 miles on my Dakota, and I'm happy to say that my objectives have been well satisfied.

Perhaps it's easiest to describe a Barcroft as a better-looking (in my opinion), stretched out V-Rex, with a lower seat height and higher bottom bracket. This results in a more powerful pedal position, better weight distribution, and less wind drag. The wheelbase is 48", which is substantially longer than most SWB bikes, and contributes to its excellent weight distribution and ride.

### **Frame & Build**

The goals of the frame design are: low seat height, even weight distribution, efficient pedaling, and a smooth ride. The frame is also designed to be strong enough to tow a trailer. I have not tried to tow a trailer, but the other objectives have definitely been met.

The Barcroft Dakota's 4130 TIG-welded CroMo frame consists of a single 1-7/8-inch tube which has a Mandrel bend behind the seat. The rear triangle is attached to the main tube behind the bottom seat mount. The front derailleur mount is attached at the very front of the main tube and is tall enough for mounting other accessories. Rack mounts are provided on the rear stays, and there are two water bottle cage mounts forward of the front wheel. One mount is on the top, and the other is on the bottom. These mounts can also be used for a faring. Barcroft also offers an optional cadence mount, and will paint your bike any color. My Dakota is painted a very bright yellow, with a blue pearl in the clearcoat.

The Flip-It above seat steering (ASS) assembly and seat are from Rans. The steerer and seat are a proven combination and I'm very happy with them. My bike came with a rigid fork, and I've been satisfied with it. For those who desire a suspension fork and don't mind the extra 2 pounds, a Ballistic fork is available. Bill Cook advised me to first try the bike without a fork, and his advice is sound. I have no desire to add a heavy suspension fork.

### **Comfort/Ergonomics**

The Barcroft Dakota is a comfortable and laid back bike. There is good reason for this besides being fast: having the rider reclined means that the dreaded "recumbent-but" is a thing of the past. Also, road shock is transmitted over the torso, thereby avoiding spinal compression. I have taken some large hits on bumpy descents, and while I definitely felt them, I was never uncomfortable. The frame and seat offer enough flex to make me not miss rear suspension. The seat recline is adjustable for those wanting to sit more upright.

The Barcroft Dakota comes with Rans Flip-It handlebars and a Rans seat. Rans' seats enjoy a well-earned reputation for extreme comfort and the one on my bike is no exception. However, I have only two minor complaints about the Rans seat: First, it doesn't collapse easily for shipping. Second, the seat-mounted water bottle cages cause tall water bottles to stick out past the seat. I've devised a very simple fix that rotates the cage inward, and would be happy to share it if contacted directly.

The relatively high bottom bracket (2.5-inches above the seat base) is not a comfort issue. Some riders have complained about sleepy feet on high bottom bracket recumbents. I have only experienced mildly sleepy feet on one out of ten 80 mile rides. On that cold January ride, I was experimenting with different shoes, and attribute the sleepy feet to either the shoes or the cold weather. Speaking of shoes, I have noticed that I need to move my SPD cleats as far back as possible because my feet now rest at the back of the shoe.

### **Drivetrain**

The Barcroft Dakota comes with a Deore XT / 105 9-speed drivetrain and triple front chainring. SRAM Rocket twist grip shifters are standard. All of the components are first-rate and perform very well. I've never dropped the chain or had a mis-shift on aggressive descents.

The chain management features one idler for both the top chainline and bottom. This clever design utilizes a bearing cartridge and custom idler material to produce the quietest idler I've ever heard. It is barely audible if you're climbing in a very quiet area, and is never annoying. The amount of vibration felt through the pedals is minimal and only noticeable when I'm using the big front ring. My only complaint about the chain management is that chain slapping during my bumpy descents has caused some minor paint chipping. This has been fixed by applying clear protective tape to the frame.

The upper idler has relatively little deflection, and is useful for limiting unwanted chain slap on bumpy descents. The amount of deflection is the least while in the small chainring, which means that power loss is virtually nil when it is most critical.

### **Wheels/Brakes**

My Dakota came with a 406mm 20-inch front and a 559mm 26-inch rear wheel. It can also be ordered with a 16-inch front wheel.

I ordered my Dakota with Velocity Deep-V wheels and Odyssey A-Brakes. The Velocity Deep-V aero rims are heavier, but very strong. I do many rough and steep descents and wanted a strong wheel that would dissipate heat well. The black Velocity rims are very attractive and contrast well with the bright yellow paint. They've also held up very well over the first 1000 miles.

The stock tires are Primo Comets. These are very good tires, but I wanted something wider and I ordered 1.3-inch wide Vredstein S-Licks front and rear. They are supple, sticky, and a good compromise between quality of ride, weight, and aerodynamics. The Dakota easily has enough room for a 2.0-inch slicks in front and back, and still has room for fenders. I may experiment with larger tires in the future, but so far, I don't find the Vredsteins to be deficient. If you're planning on commuting on this bike, you'd probably want a wider tire.

The Odyssey A-brakes are easy to adjust and work very well. I had a slight squeal problem while braking hard with the rear brake. This was fixed by adding a brake booster. Apparently, other Barcroft owners haven't had this problem.

### Ride

The Dakota is a laid back and fast bike. I currently have my seat midway between full recline and upright at a 45 degree angle. The advantage of this is that much of the weight and shock is spread over the back. The ride is firm, but not jarring, I was concerned that the BikeE's rear suspension had spoiled me, but that was not true. Initially, I had asked for front forks, but Bill Cook made an excellent recommendation to first try the bike with solid forks. Three months later, I have no desire for the extra weight of suspension. It is possible, however, to get a bit of a vibrato while talking if you're on extremely rough pavement. Overall, though, the bike feels very solid and quiet.

The 50/50 weight distribution gives the Dakota superb handling. I'm still experimenting with aggressive cornering, and I have only encountered slight slides in slick corners. The bike was very neutral in those cases, with neither wheel more prone to sliding. My only other experience is with a BikeE AT, where the front wheel was overly responsive at speed. I would do virtually all body steering at high speed and give almost no steering input. The Dakota is less sensitive, and the front wheel is less prone to sliding. I find myself having to relearn to push the front wheel around more. I find myself braking into corners, and then asking myself why I did so much braking.

### Performance

The Dakota is a high-performance bike. Almost every weekend, I ride it to the Pacific Ocean from Silicon Valley. It's a 70-mile ride with about 6000 feet of climbing. The area is very hilly. I can ride with my upright buddies, and be only a tad slower on climbs. I now have about 1200 mi on it, and I'm extremely pleased. I'm expecting that as I get more fine adjustments done, I'll be faster still. The high bottom bracket is a big plus on hills, because I can push against the seat back as I pedal. On bikes with lower BB's, it's much easier to push yourself out of the seat.

In comparison to high-performance upright bikes, here are my opinions: The only way an upright can stay with me on level ground is facedown in a full tuck. At that point, it all comes down to how long the upright rider can maintain that position. In comparison to other recumbents, an unfaired Dakota is faster than an unfaired Easy Racer Tour Easy, for me, but not as fast as a Gold Rush.

I wondered how the Flip-It bars would behave in a panic stop. Would they come forward as I was thrown out of the seat? I have had to initiate one panic stop from 30 mph, and am happy to report that nothing unexpected happened. I stayed in the seat, and was able to stop the bike very quickly. I suspect that the laid-back position and high BB helped insure that my torso would not swing forward.

### Touring / Use

Both Barcroft models are designed to tow a trailer, so heavy touring shouldn't be a problem. There is a generous amount of room for panniers both under and behind the seat. Also, the even weight



Author Paul Kern and his Barcroft

distribution of the bike should allow for a heavy load on the rear rack without ruining the bike's handling. I haven't toured on my bike, but am looking forward to both touring and double centuries this summer. Commuting on the Barcroft is certainly Okay. However, if plush commuting is a top priority, there are other recumbents better suited to the job. This bike would be a fine choice for the rider whose focus is performance riding and who occasionally uses it for commuting and errand running.

### Options / Accessories

Barcroft offers fenders, mirror, bell, and cyclometer, as well as a cadence mount near the cranks. I mounted a standard Blackburn rack without difficulty, and have my CamelBak slung over the seat. I've also used the front derailleur post to mount my Niterider Cyclops headlight. Turning the light on and off while riding has not been a problem. The Rans seat bag will work fine, as it's a Rans seat. Mounting a frame-mounted front faring should be easy, as there are two water bottle mounts in between the cranks and the fork.

### Verdict

The Dakota is an outstanding choice in a performance SWB bike. The design and execution are first-rate. One thing that clearly sets Barcroft Cycles apart is the ability to pick and choose your components and paint color, which allows you to have a bike that is uniquely yours. The Dakota is my second custom bike, and the pride of ownership is difficult to describe.

At the end of an 80-mile ride, my upright riding buddy told me that I may need to soon find a faster riding partner. Fortunately, he's now in the market for a recumbent himself. u

### Rating

Comfort: A-  
Design/Style: A  
Drivetrain: A  
Chain Management: A-  
Brakes/Braking: B+  
Finish Quality: B+

### For

Customization! Colors, components and tires  
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RIGHT: Author Paul Kern and his Barcroft. LEFT: Note the Barcrofts X-path chain idler, RANS seat and Flip It stem/riser

**NOTE:** As of this writing, production of the Barcroft recumbent bicycles has been moved to Steve Delaire's Rotator plant in Santa Rosa, California. Rotator's are brazed, not TIG welded, so there are likely to be some changes to the Barcroft line for 2002.

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Foot/heel clearance with the front wheel  
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 Bike is difficult to clamp into my repair stand.  
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 A very small company/production changes/long lead times

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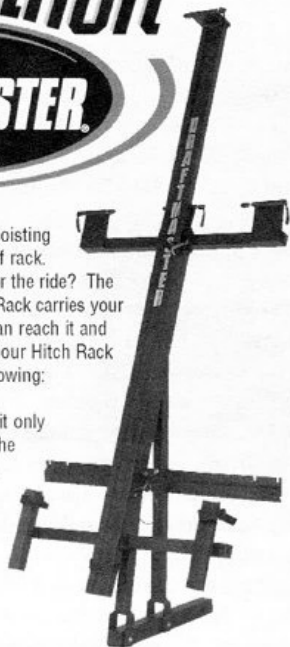
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# The Design, Construction and Touring of the Cubed Deuce

by D. M. Fulks, DMFulks@aol.com

The saga of the Cubed Deuce: Deuce as in two, as in tandem. Cubed as in to the power of three, as in three wheels.

It all started a couple of years ago when I got the bright idea that a tandem would be fun to ride with my wife, Donna. Our local bike shop owner said he would be glad to sell us a tandem but if we really wanted to check tandems out we should hook up with recumbent riders and learn as much as we could about the different designs. Over the next few months, we rode every type of tandem we could.

Comfort was an important issue as I recalled our previous family vacation that had been a week long bike camping trip on the Greenbrier Rail to Trail in West Virginia on mountain bikes. What I remember most was the sore neck, shoulders and arms. The comfort aspect of the 'bents we test-drove made a lasting impression on me.

I decided I would get one of those 'bents—even if I had to make one myself. It is easy to rationalize that it will be cheaper to do it yourself. Truth is it is hard to save money building it yourself, especially if you try to make something a bit different or strive for a polished result. While some people paint to express their creativity, I build things. How do you set a value to the satisfaction of creating something? After a year of dreaming, I started to design. The tandem would be ready for our 20th anniversary— just two years away. Maybe I could take Donna on one of those Inn to Inn bike trips in Vermont!

## Design

I had several design criteria: One, the frame would be aluminum. As a farmer who has welded a lot of aluminum irrigation pipe and fittings I have more experience TIG welding aluminum than steel. Plus aluminum has a more exotic aura. Two, the bike would be able to convert from a single to a tandem and back easily. Three, it had to have an independent pedaling drive train when configured as a tandem. After trying a RANS Screamer with a DaVinci Drive and a Vision with IPS there was no way I could consider a tandem without independent pedaling. Four, it must have full suspension. I'm a suspension junkie as 90% of my riding is on dirt roads around the farm. The rear suspension design had to avoid pogo (pedal induced suspension movement) while remaining active. Five, it would be technically an in-line trike. In other words, the rear end would be a tandem boggy wheel set up. There were several reasons for this unorthodox feature: The first has to do with my personality. My mother always said I was the different one, which is how a mother politely says, "That kid is a little weird." After all, if you are going to go to the trouble of doing something it might as well be distinctive. Secondly, I wanted to use all 406mm 20-inch wheels and reasoned two wheels in the back would spread the weight better. We are not a bantam weight tandem team. I also knew that a tandem boggy wheel set would provide a smoother ride by cutting bumps in half before the shock absorber came into play. Thirdly, a third wheel also provides for a third "V" brake. The more binders on a tandem the better I reasoned.

I subscribe to the stealing and cheating school of engineering, meaning I try to borrow working concepts and design strategies where possible. There are reasons why designs with good track records work. The challenge is to discern why and to incorporate these good concepts into my own designs. I have found it easier in the long run to not "reinvent the wheel," where possible. On the other hand, I try hard to keep conventional concepts from preventing me from "thinking outside of the box" either. The real fun in designing comes from melding what you know a posteriori with

what you think you know a priori.

I figured it couldn't be that difficult to build a bicycle. Well, I found out there is more than meets the eye in designing a bike. Like all those pesky little details such as head tube angle, cable routing, chain line, etc. So I hit the Internet to dig up some ideas worthy of stealing and cheating with.

I spent about six months drawing concepts, first on paper then on computer to scale. The first challenge was measuring bodies for ergonomic considerations and measuring bike components for dimensions. I soon found out all the variables add up in a hurry!

A conventional bike would have been easier, especially from the handling geometry portion. You can readily pick up any number of regular, diamond frame bike catalogues at any bike store and see all of the frame geometry specs listed in a nice chart in the back pages. Not so in the 'bent world! I found I needed as much intuition as analytical thought in making design decisions, which is both fun and scary at the same time.

During the design stage I was pleasantly surprised to find that folks in the 'bent community are a very helpful lot. Everyone from recumbent shops to builders was more than willing to be helpful with parts and advice. Steering geometry questions were the one universal secret builders kept that I had to solve on my own.

## Construction

Construction began almost two years prior to our anniversary by purchasing the various components for the project. In order to hedge on some of the design uncertainties, I chose to utilize Linear's aluminum frame extrusion and sliding, clamp-on components. Seat brackets, steering and even bottom brackets could then be clamped on the integral frame member flanges to accommodate any needed adjustment from the design on paper to the real world reality. While expensive, this turned out to be an ideal way to end up with a functional prototype. Knowing what I know now I could save some weight (seemingly the holy grail of bike frame design) and simplify some things the next time around. Front fork (Ballistic) and seats were from RANS. The independent drive came from DaVinci Tandems. I purchased the usual bike components from my local bike shop. The more specialized parts came from 'bent specialists.

Once all of the major components were on hand actual construction of the frame began. The design required a lot of custom milling which would not have been possible without the help of my friend Mac who happens to have a very nice milling machine in his shop. Mac is going to be munching on my tasty strawberries for many seasons to come! The head tube was milled from a solid block of 6061 aluminum (all aluminum is 6061). Next we bored a hole through the frame to mount the DaVinci drive mechanism. That was the easy part.

More challenging was fabricating the rear wheel stays and suspension area. Because the bike's three wheels are in line, the rear wheel has to swing from side to side to allow for turning the bike. Also, the two rear wheels pivot up and down over bumps like a seesaw. Solid blocks of aluminum were milled out to allow for a tidy and strong means to tie the two pivots and both rear wheel "forks" together into an integrated unit. Due to the compound angles involved, AutoCad software came in handy to dimension and render 3D prints for milling these tricky parts. The forks and dropouts I fabricated by hand. I learned that aluminum parts could be made quite accurately by dimensioning with a quality stainless steel rule, compass and square. Simply color the surface to be worked with a

magic marker and use a sharp scribe. Then shape the piece using a fine hacksaw blade, file and/or belt sander. Spraying WD-40 on your hacksaw will allow it to cut through aluminum like butter. Aluminum can also be bent by carefully heating. The heating takes a bit of practice, as too much heat will result in a cracked and ruined piece. Aluminum is tricky to work because unlike steel, it does not change colors as it heats.

The rear bogey assembly connects to the main frame via parallel suspension linkages. I had to have them custom machined at the machine shop. I used a Cane Creek air shock to soak up the big hits. The rear suspension is designed in such a way that drive train torque from pedaling has no effect on the suspension. I made some fortunate, intuitive guesses that panned out.

The rear end took the most time to fabricate due to the number of parts and lack of welding jigs to secure all of the pieces to ensure proper alignment. Once the rear end was finished the bike could be assembled.

The steering geometry took the least time to fabricate and most time to design. I spent many hours considering head tube angle, trail, etc. hoping the bike would handle acceptably. Handling geometry remains a tantalizing topic, which I have since continued to study. A note about welding aluminum: It is amazing how much it pulls, warps, bows or otherwise moves from the heat of welding. Some of this heat induced shifting you can learn to account for, some you can prevent by altering welding sequences and some of it you just have to bend back into shape when done if you don't have adequate jigs. Assembly was a learning experience, as I had never adjusted shifters and derailleurs, cut cables and cable housing to length, etc. I had to learn the entire routine bike wrenching stuff done by teenagers in any bike shop.

### Time to Ride

The first ride was eight months prior to the anniversary trip. We spent a week of vacation on the New River Rail to Trail in SW Virginia. Things were busy on the farm, as usual, and I finished welding the frame the night before leaving. This meant that the brake and shifting cables had to be installed once we arrived with no test ride before leaving home. You can take your pick; either supreme confidence or total lunacy on my part. Either way, this is not the recommended testing procedure. I spent the day after arriving installing cable stops and cables and making an impromptu chain idler.

The one thing in the design I had gambled on and ignored all the red flags in my mind was the length of the frame. It was short to the point that the center of gravity of an adult sized stoker was slightly behind the axle of the drive wheel, but still well ahead of the trailing rear wheel. My worry was that



*The Cubed Deuce, our inline trike tandem.  
Yes, that's a lot of chain! Runs quiet and shifts great—D.M. Fulks*

this might cause some stability problems. The effective wheelbase for handling issues is between the front axle to the drive wheel (the middle wheel) axle, not between the front and rear most axles. Therefore, if the bike is steered to the left any weight of the stoker behind the drive axle is swung to the right and vice versa which led to a serious instability problem. (I speculate that this problem cannot be alleviated by different steering geometry but more engineering study may prove otherwise.) So when we tried to ride we promptly ended up on the ground. To add insult to injury, a pedal skinned my shin.

We did bring our wedgies as a back up plan, but I sorely wanted to ride the new bike. The only test victim with short enough legs to allow the stoker's seat in front of the axle was 10-year-old Kyle. With Kyle stoking I was able to enjoy riding the new beast. The results from the shakedown run were somewhat mixed. The good news was that the bike worked and was fun to ride with a short stoker and the frame was structurally sound. The bad news was my wife is tall and our 20th anniversary bike tour was less than a year away. I thought I detected a jaundiced glance out of the eye of my wife after the second time we crashed that first day. I briefly wondered if a cruise might be a better anniversary trip.

### Frame Stretchin'

Actually, Kyle and I rode the tandem on another trip as well and had a blast. We even pulled Quinton in his child trailer behind the tandem with no problems. Now I was certain that all I had to do was stretch the frame a bit and all would be well. I figured 15-inches longer should do it, 18-inches for sure. Having erred on the short side the first time, I opted to err on the long side the second

time and made it 20-inches longer. The Teflon coated rear suspension bushings were also looking suspect with unacceptable wear. So I cut the frame in the middle, installed a joint so that I could take the bike apart quickly and redid the suspension bushings with stronger, more durable oil impregnated bronze bushings. Once the longer frame was welded up I shipped it off to Anodizing Inc. in Portland and had the bike anodized a beautiful deep, almost maroon, red. Upon reassembly, it became apparent that the extra frame length had foiled my straight drive chain line. Instead of the drive chain easily bracketing the stoker's bottom bracket it now ran close to the underside of the newly anodized bottom bracket housing. The fix involved a choice between chain tubes and idler pulleys. I had plenty of drip irrigation tubing the right size for chain tubes but it was noisy. The noise seemed to come from the chain entering the tube and with the wide range of oscillation in the drive wheel I could not see fastening a tube in a quiet position. I used idler pulleys instead. Due to the long length of the drive chain and wanting to have minimal angular deflection over the idler on the tension side of the chain I chose to use two sets of idlers. Large diameter in-line skate wheels were used to make the top idlers and smaller 58mm goalie wheels were used for the lower, return idlers. Chain keepers were made from nylon bushings fastened with #8 stainless machine screws. The rear idler bracket clamped on the underside of the frame and had to be made to allow the brake and shifting cables to pass through it. I used DaVinci cable connectors near this point to easily separate the bike into two at the frame joint. Half-inch wide grooves were recommended for the chain idlers but I noticed that a nine-speed chain could easily twist over on its



*Donna and Donnie having a wonderful time with Bike Vermont at the Kedron Valley Inn*

side in this width. I cut the idler grooves 3/8-inch wide. The rear idler did have to be 1/2-inch wide to prevent the chain from making a racket on the side of the pulley while under load. Beveling the sides of the pulley helps to alleviate this problem.

The plan was to get all of this done by the end of March so we would have a month to get the bike dialed in and get ourselves into shape for a week of touring. I did get it together the night before leaving in time to ride it 10 minutes before packing. My wife and I were able to start easily and ride on the first try. Switching from under-seat steering to above-seat steering made it much easier to start. The extra 20-inches of frame did seem to make it a tiny bit twitchy though. So I stayed up late the night before leaving and welded up a frame stiffener just in case. Ready or not, we were off to Vermont.

### **Bike Vermont**

To celebrate our 20th anniversary I knew the emphasis had to be on a romantic time. In other words, no self-contained bike camping allowed! We signed up with Bike Vermont for a week of Inn to Inn bike touring. Vermont is a hilly place so I chose the easiest rated tour. "Easy" is one of those relative terms so I called the Bike Vermont office to clarify the term. The girl on the phone assured me that half of the hills were indeed down.

We arrived at the October Country Inn Sunday afternoon where the tour would begin. Our tour guides, Herb and Brian, arrived as the other members of the tour drove in. A scrumptious dinner was served followed by an informal meeting with everyone to go over the tour in general, meet the other members of the tour, and discuss the first day's ride.

Monday morning most of the group opted

to take the van to the regular starting point a few miles away. The serious cyclists eagerly wanted the optional miles with the steep hills and started at the Inn. The Deuce is long and Brian and Herb were worried about fitting my monstrosity onto the top of the sag van.

We were dropped off to start the tour at the top of a couple of miles of 6% grade. Before I knew it we were coasting downhill at almost 40 mph. Prudence suggests learning to ride a new bike at a slower pace! Those vaunted V-brakes started to feel mushy halfway down. Then I did recall the mechanic at the bike shop said something about new cables stretching a bit. Then it was about 16 miles over low rolling hills to the quaint town Randolph for lunch.

We were having a great time enjoying the scenery. I was surprised that I didn't care about being last in the group, stopping to see the sights and enjoying the time together was fun. Which, after all, was the objective.

Donna and I also had to learn about riding a tandem together. I like to spin up hills and she does not so we had to find a cadence we both were comfortable with. Nothing kills climbing a hill faster than a missed shift. The Deuce has 36-speeds (4 speed DaVinci up front x 9-speed in back; and a gear-inch range of 17-130). I can easily shift both front and rear simultaneously if need be.

Monday night we stayed at the Green Trails Inn, another very pleasant quaint inn with great food. All of the inns except one were hosted by the owners who meet us on arrival and served the dinner and breakfast personally. There is something about that personal touch by an owner of an inn that the large, ritzy hotels just can't duplicate. The other riders in the group, were most definitely sore the next morning. We felt great, no soreness at all which we credited to the RANS seats on our 'bent.

Tuesday was our best cycling day of the trip. The day started with several miles of 6% or better down grade. We did a lot of braking to hold it under 40 mph. The Cubed Deuce will fly down hills compared to upright road bikes. Whenever we were right behind a group of the other riders going downhill we either had to brake hard or pass if the road and traffic allowed.

We stopped in Northfield for lunch. Leaving town we had a few miles of climbing. We did not fare so well climbing which I attribute in small part to the 'bent and large part to the motors. The only time it seemed to be critical that our cranks were timed in synch was when climbing. Later while inspecting the bike, I found a broken quick release that I replaced with a bolt.

The end of the ride saw us at the Three Stallion Inn, a plush resort-like inn. We enjoyed soaking in the hot tube with several of the other bikers.

The morning of the third day began under overcast skies. The days ride began by passing back through Randolph on a long climb. After 1100 feet of elevation gain over about five miles we slowly ascended to Barnard for lunch. Rain fell during lunch leaving our seats soaked. The lesson learned is don't let your seats get wet. We dried out during the 40-mph descents as the sky cleared and the sun returned. Dairy farms and freshly cut hay fields flowed by as we pedaled toward Woodstock. We rolled into the center of Quechee Village, a delightful tourist stop complete with an Italian restaurant featuring a wood fired pizza oven. There is nothing better than a superbly delicious pizza after a long ride. The pizza brought back fond memories of our first date back in college. After more sight-seeing we made the short ride to The Quechee Inn followed by a shower and a prime rib dinner.

On the fourth day we had a short ride back to Woodstock to the Bike Vermont headquarters. Here we spent the better part of the day with a naturalist on a guided hike up the mountain overlooking Woodstock. The view was splendid from the top, a thousand feet above the historic New England town and the surrounding farms. After the hike we made it back to our bikes just as the downpour started. Wet seats again for the 4-mile uphill ride to the Kedron Valley Inn.

We started the last leg of the tour on the fifth morning as we headed back to the beginning, the October Country Inn. A good portion of the ride was on dirt roads, which the Deuce handled well. I don't remember thinking about the bike as we rode that last day.

We wished we could stay another week. My wife says this was the best vacation we have ever taken. Was it the canopied beds in those romantic inns or the smooth riding bike? She does really like to ride the Deuce. It must be the bike. ♦

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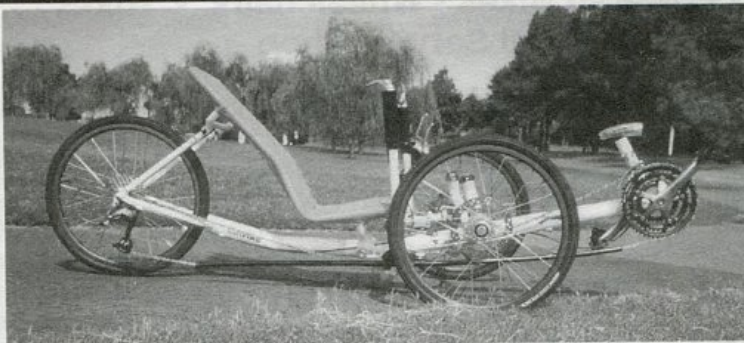
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# Building a Bentech SWB

## From A Kit

By Susan Townsend  
sgtown@jps.net

In January of this year, I came down with the "Bent fever." I believe I contracted it from a rider I saw who looked awfully cool and kicked back riding a recumbent. Or it could have been when I went to the gym and worked out on a recumbent exercise bike and realized that my knees didn't hurt anymore. Either way, I remain afflicted to this day.

I had to have one! I checked the local bike stores, but they did not carry any recumbents, so I started searching the Internet. I found many different brands and emailed each company for more information. I soon had a thick pile of brochures, but none of the bikes met my exact wishes. I wanted a SWB USS. So far, so good. Many companies had one of those. But I wanted good MTB components and tires (not many of those around) plus I wanted Rapid Fire shifters. And it had to have a comfy seat. Not finding a bike I truly loved, I looked into the possibility of building one.

That's when I found Bentech. They have blueprints and instructions for building a LWB or SWB, with ASS or USS. They also sell frame kits where you add your own components. I used to work as a mechanic and I have a whole roll-away filled with tools, but I'm not a welder and I wanted the frame made by someone who was familiar with building bike frames. So I decided to get the SWB USS frame kit for \$399. It included the main frame and adjustable boom, front fork, steering tube with steering linkage rod, plus a seat frame, seat stay tubes and a mesh sling. Also various hardware and component recommendations. Now I was set to begin.

The frame comes as bare metal, and Bentech recommends putting the bike together first, then disassembling it for painting. But I'm so smart I decided to skip that step (I would later regret it). I wanted a nice powder coat, but my husband convinced me that he could do a good job spray painting it. I picked out the colors I wanted, and I must say that it looks pretty decent, so far. But it chips easily if I'm not careful, so maybe later on I'll powder coat it.

Next it was time to put on the headset. I needed 2, one for the fork and one for the steerer tube. There was no problem with the fork, but the steerer tube was out of round. I assume it happened when the steering extension for the steering rod linkage was welded on. A little grinding and sanding and everything was okay. I don't have a headset press, but the table vise worked just fine.

I decided to add the steering rod linkage next. The rod is threaded on both ends, to accommodate the jam nuts and rod end bearings. I found the rod to be too long with the end bearings added, let alone the jam nuts. I left the jam nuts off and had to grind down the threaded ends to shorten the rod. I was worried that this wouldn't work and I would have to make up a new rod, but the bearings tightened up on the ends just enough to fit perfectly in line (see picture). Bentech offered to send a replacement rod later when I notified them of the problem, but I declined since it was an easy fix. Thank goodness.

By now the wheels were on and I was ready for the seat. I decided the aluminum seat stays had to go. I wanted to add water bottle bosses and braze-ons for a rack (I don't ride anywhere without water and a submarine sandwich), and I can't braze aluminum. I got some 1/2 inch CroMo tubing that I was able to drill, braze and sand easily. It looks better I think because these seat stays are a bigger diameter than the original ones and so it looks sturdier and more like part of the bike frame.

I put on the mesh seat sling and attach the seat to the frame, but when I do a "sit test" my feet are dangling 6 inches off the ground! I can't reach the ground without sitting forward considerably.

What's wrong? I made the seat stays the same length as the original ones, and the seat is not angled back that much. Also, I'm not that short for a woman (5' 7"). I try angling the seat up enough so that my feet can touch the ground, but now I am hitting the steering tube underneath. Finally I get on the Bentech website and look at the pictures of all the other people who have built a bike. They are sitting comfortably, but most of them have ASS, so there is nothing underneath to get in the way if they adjust the seat angle. One guy has a USS bike but his legs look long enough that he doesn't have a problem.

I tried various remedies and seat angles, but nothing works. I will just have to make another seat frame that fits me. That's okay actually, because I didn't really care for the mesh seat anyway.

I went to Sears and look at the recumbent exercise bikes. They sell replacement parts, so I pick out a seat and back rest that I like. I get some EMT electrical tubing and cut, bend and jig up a new frame. I would have used CroMo, but it is so strong that it kinks when I try to bend it with a hand EMT bender. Bentech also suggests using EMT for the seat frame if you build with their plans, even though some welders refuse to weld EMT since it gives off toxic fumes. I found a guy to weld my seat frame after I thoroughly sanded off the coating.

Now it's time to add the components. Everything I put on is Shimano XT. The brakes are a snap (the frame and fork come with V-brake studs welded on). But the front derailleur will not go on because a cable stop that is welded on the boom is right where the derailleur needs to be mounted. Bentech had recommended in their literature to use a Shimano 105 SC or RSX 100 crankset (for road bikes), so maybe the cable stop would not have been in the way for that particular derailleur. Anyway, I grind off the cable stop and have a new one welded on about 2 inches lower.

The kit also comes with a chain tube and one idler roller, but I decide to ditch the chain tube and use 2 idler rollers to guide my chain instead. The main frame comes with a slender channel welded on and a hole drilled at one end to attach the bottom idler roller. I drill a hole in the top end for the other idler roller, but cannot bolt it on because the channel is too tight against the frame to get a nut into. I grind down the nut and now it fits. Yippee!

Time to put on the chain. I am sure I will have a problem with the chain hitting the frame or jamming up, because the seat tube bolts are so close to my 9-speed rear cassette. I just know it will catch when I try to shift. Well, I'm wrong. The chain shifts oh so smoothly and doesn't hit against anything.

I'm finally ready for a test ride. I try riding in circles around my driveway and my feet hit the front tire and I'm convinced that I will crash and break my neck. So I take it out on a flat, straight road and now I'm getting the hang of it! This is great! My weight seems well balanced between the front and back tires, and when I brake hard on the front tire alone I don't tip forward (like I've read of some bikes doing). The steering and handling are a dream. There's no shimmy and I can easily steer with one hand. And my custom crafted seat is just too perfect. If I didn't know I was riding this bike I would think I was lounging by the beach.

I've been on a few shorts rides so far and I only have 134 miles on it. Everything is peachy keen except for an intermittent clunking noise that seems to be coming from the steering linkage rod. I checked my headset and handlebars and they are okay. I think it must be the rod end bearings (they cannot be tightened) so I may try replacing them sometime. Altogether, it took me about 10 weeks to

get this bike built, and most of that time was spent looking for parts on the Internet, ordering them and waiting for them to arrive. The few problems I had also added to the building time, but that's what DIY (Do It Yourself) is all about. I estimated that it would cost me around \$1300, including the \$399 for the frame kit. I kept track of every penny I spent (I bought everything brand new), and it came to \$1520.89 total. This included everything on the bike, the cordless computer, rack and pack, Sun rims and Shimano XT group. Without the special seat I made it would have been \$1388.21. I could have done it much cheaper with parts off of my old mountain bike, but hey, I've got time to kill and money to burn (the husband cringes when I say that!).

Even with the few problems I had building it, I'm very happy with my Bentech bike. It was a great experience and I have the bike set up exactly as I want it to be. I know I will own another bent bike in the future, probably a CLWB. Maybe I'll also try ASS with direct drive so I can compare the two. ♦



*The author, Susan Townsend, on her bike*

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# Feedback From Bentech

by Dom Bencivenga  
Bentech Recumbent Bikes  
www.bentechbikes.com

I just thought I would drop you a line regarding your inquiry about the costs involved in building a Bentech frame. First a little background. In 1995 I got serious about acquiring a recumbent bike. Like a lot of potential buyers I was seriously put off by the high prices of commercially available bikes. Being an inveterate tinkerer (and a high school technology teacher) I decided to build my own. I had just become aware of the Internet and started doing some research. I also found back issues of RCN to be of immense value during the design phase. In due time, I finished my first SWB prototype and all was right with the world!

This first bike cost me less than \$100 to build because I used "muffler moly" and electrical conduit for the frame and seat. I also found a local guy who had a very small bike shop who sold me used bike parts. This bike (the green one) is still pictured on my website. It turned out great, despite the fact that it is a little heavier than I would have liked. During this time, I read many emails from people like me (regular guys and gals) who were looking for plans to build their own bents. I decided to clean up my drawings and write up a procedure booklet and the Bentech plans were launched in the summer of 1996. Since then we have sold over 1000 sets of plans and have branched out into sales of bent tube kits and welded framesets to meet the needs of our customers.

## Can a recumbent bike still be built for \$100?

It depends on the situation of the person building the bike. If you have all the tools (drill press, jig saw, grinder) and a source of cheap (used) components, I still believe you can build a rideable bike for \$100 or less. A further question remains: how long will you be happy with this bike. Now we get into the realm of personal preference, where fashion, status and one-upmanship come into play. This is where things get more expensive.

If "muffler-moly" is too heavy for you, the next logical step is build your frame from CroMo or aluminum. Bentech sells a complete frame and seat CroMo tube kit for \$159 + shipping. Add to this a headtube and bottom bracket shell and you are in the range of \$200 just for the frame parts. The plywood welding jigs will cost about \$25 to build. If you are not a TIG welder it will cost you \$100—\$200 to have a professional do it for you. A nice paint job or powdercoating will add at least another \$100 to the bill. Our total now stands at about \$475 (\$225, if you weld and paint your own)

and we still need components.

Here is where you can spend some serious jingle. There are many mail order and local sources for bike components so the prices can vary wildly, depending on location. I did some Internet checking on www.recumbents.com, Mark Matarella's excellent web service, and found Power-On cycling from Tampa, Florida. I used them for reference since they carry a wide range of components and are an excellent source for the recumbent builder since HPV Supply is on hiatus. I totaled up two sets of prices, high and low end, for all the components needed to build a bike from scratch with new stuff. The high end parts, which were typically Shimano XTR quality, totaled out at \$1107. At the opposite end of the scale (Shimano Acera and Sora) it added up to only \$378. A wide difference, for sure. If you've been following the costs, we've now spent almost \$1600 for a top of the line bike with a professional paint job that was also welded by a professional. If you weld and paint your own bike with lower end components, you've spent \$603. Will the cheaper bike ride any differently than the \$1600? That's for the builder to decide. Some of us, who aren't fashion plates, are perfectly happy to ride \$600 bikes. Others need to have the best of everything. That's what makes the world go around. For the builder who is on a serious budget there are other alternatives that can bring down the costs further.

Many Bentech builders use donor road or mountain bikes that can be stripped of their parts and put to use on a recumbent. This can be a very cost effective way to get into a recumbent and still keep the missus (or significant other) happy. Even if you bought a brand new donor bike with decent components for \$200-\$300 you can still save. Another way to save is to establish a relationship with your local bike shop. I can't stress this enough. Bike mechanics and store owners who are really into biking will take an interest in a special project like this. Many, who are not yet recumbent savvy, will use you as a way of learning more about recumbents in exchange for discounts on components or by letting you buy used parts from their vast assortment of "junk" parts that are still very usable. They can also help you by pressing in headset bearings and setting up derailleurs that can be problematic for neophyte bike builders. This is something mail order dealers can't do for you.

So there you have it. My \$.02 worth on how much it costs to build a recumbent. ♦

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The following kits are available: Complete Frame & Seat Package; Main Frame Kit; Seat Kit; Main Tube; Chainstay Kit.

The Bentech plan sets include three 22"x34" blueprints and a fully illustrated construction guide that shows you step-by-step how to build your own recumbent bicycle. The cost is only \$30 + \$3 S/H. Please Specify SHORT or LONG wheelbase .

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# Recumbents Among Uprights on the AIDS Ride

by Marty Goodman

Rider number 7545 on the 8th California SF-LA AIDS Ride  
martygoodman@worldnet.att.net

Recumbents have difficulty on club rides and group events riding with upright bikes: Their natural pace is significantly slower on uphill and usually significantly faster on downhill. The result is that recumbent and upright riders on a club ride will tend to play a defacto game of "leapfrog," and will not be actually "together" much of the time, even if their average speed on the ride is the same. I have just completed the California AIDS Ride where this was a significant problem.

The 8th annual SF to LA AIDS Ride consists of 575 miles from San Francisco to Los Angeles, 2800 upright bicycles and lot of hills. The only way to maintain a good speed with respect to one's brothers and sisters on upright bikes is to take full advantage of the greater speed one can achieve on the flats and descents, to make up for what one loses on the climbs.

Unfortunately, many upright riders don't fully understand this characteristic of recumbent bikes. Some think you are being a show off taking the downhill at significantly higher speeds than upright riders. Some will think you are being mean or macho if you suggest to an upright rider about to pass you at the crest of a hill that it would be best for him or her to hold back, because in a matter of a second or two you'll be going so much faster than they will be that you'll just have to pass them all over again.

The Safety Monitors on the SF to LA AIDS Ride presented a special problem to riders in general, and recumbent (and tandem) riders in particular. The problems here were the result of many things: The culture of corporate arrogance that pervades Palotta Teamworks, the organization that puts on the AIDS Ride, is one major problem. The abysmal lack of understanding of bicycle safety issues and of California vehicle code law by the Safety Monitors was another. Their ignorance of the characteristics of recumbents was yet another problem. All of this was made worse by the fact that the Safety Monitors tended to substitute bullying and threats for reasoned discussion.

When I got to the top of long descents, I made a point to speak to whoever was in the control vehicle at the top of that hill. I would tell them that I was about to violate one of the Ride's rules: "Never ride in the traffic lane." I'd explain that as a recumbent rider, I would be going 10 to 20 miles an hour faster than all other riders, and so it did not make sense for me to pass each rider on the shoulder, but rather to zoom down the road in the lane. I pointed out I'd be going at the speed of traffic in most cases, and that I was an experienced rider who always used his rear view mirror to make sure that when he was in the lane, he was riding safely and not compromising automobile traffic. For the first five days of the ride, each time I did this the people in the control vehicle said they understood and would not object to my taking the lane. So I did.

On the sixth day of the seven day ride came the steepest and most prolonged descent. It was also the most tricky one, being down highway 101, where there was significant two lane in each direction traffic. Knowing that when I was seen in the middle of the lane I would stand out (I was the single most visible bike on the ride, with my electric green-yellow body sock and distinctive long wheelbase recumbent profile!), I made an extra effort to contact safety people to let them know what I was about to do. I spent 20 minutes at the rest stop at the top of the hill going from one ride crew person to another,

trying to find someone responsible for safety. When I finally found someone who claimed to be responsible, I repeated my tale about how I would be taking the lane, safely, and why. The response again was "Sure... do what in your judgement is proper and safe."

I headed out into the lane at the top of the hill during a break in traffic, and hit over 52 mph. I passed hundreds of riders. About halfway down the hill a safety monitor angrily gestured to me to pull over at once.

Attempting to comply with her request then would have been very dangerous to me, and in any case I knew what I was doing was proper, and had already cleared my actions with a person at the top of the hill. As I passed this woman I shook my head and rolled my eyes briefly in frustration, thinking of how hard I'd tried to clear my actions. When I got to the bottom of the hill the AIDS Ride safety storm troopers were waiting for me. This woman had me pegged as a trouble maker. She grabbed me and my bike and said she was about to throw me out of the ride. At great length I explained what I'd written above about clearing what I was to do with other people. Through clenched teeth, staring at me behind sunglasses, and addressing me as a number rather than as a name, she "apologized" for the misunderstanding and reluctantly suggested I might be allowed to complete the ride, while making threats again and again that this was to be only on probation, and that I'd be thrown out if I did anything whatsoever she did not like. I got the feeling this woman's day job was that of a prison guard.

The AIDS Ride safety people also encouraged riders to fink on other rides who did not adhere to their precise and petty safety instructions. An example of how obscenely absurd this got was my experience on the last day of the ride. I'd gotten laryngitis, and was unable to talk. I was thus unable to shout "On your Left!" As I approached and passed other riders. Instead, I use my bell mounted on my handlebars, which was the "I'm about to pass you" signal I'd become accustomed to using on club rides. I repeatedly had riders angrily and very self-righteously say "I'm going to turn you in for not shouting "On your Left."

One rider on a low recumbent told me that often riders he screamed "On your Left" to failed to hear him, because his mouth was so much lower than their ears. Or because he was moving so fast. This resulted in his repeatedly being threatened to be "turned in" by ignorant novice riders.

My advice is for recumbent riders to either avoid this event, or expect to have problems relating to the hostility and ignorance of the safety crew of the AIDS Ride.

My suggestions to Palotta Teamworks (which puts on the AIDS Ride) is that their safety team should all be required to take an *Effective Cycling* course, and familiarize themselves with California vehicle code as it relates to bicycles, and learn a bit more about the issues involved in recumbents riding among upright bicycles. They should abandon some their inappropriately rigid rules, which are at odds with both common sense and California law. They should also require all riders to have use a rear view mirror. And make clear that there are more ways to alert a rider that one is about to pass them than screaming "On your Left."

All of these problems with Palotta Teamworks' implementation of safety rules are doubly unfortunate considering how superbly well

they did in most all other aspects of putting on the ride: Their handling of the immense logistic challenges of preparing and feeding 2800 riders tasty, nutritious meals each morning and night, arranging for elaborate camps with showers and many other support facilities, all of the riders gear, tents, etc. to be taken down and set up each day, was all phenomenally well handled. I can't see how they could have done a better job in those areas. Their setting up of rest stops every 15 miles every day of the ride, setting up a smoothly-functioning lunch stop, setting up "grab and run" stops between some rest stops for even more convenient re-hydration and re-fueling on the ride, was all outstandingly well done. It all contributed to what mostly was a superbly well-constructed environment for first time and experienced riders to complete the 575 miles from San Francisco to Los Angeles comfortably and safely.

### The Easy Racer Gold Rush on the AIDSride

We averaged 80 miles a day (55-102 miles per day). My relatively new Gold Rush (which replaced my old Tour Easy of about 5 years acquaintance just 6 months or so ago) performed magnificently—and actually better than I'd expected it to, and I was very optimistic going into the event about how well the bike would work.

I'd just gotten a body stocking for the bike, and was just learning how to use it on the event. I used it about 50% of the time, on the long flats and rollers and long downhills. I removed it for sustained climbs, severe crosswinds, and a bit on exceptionally hot days. It takes about 45 seconds to remove and stow the body stocking. I got into the habit of strategizing when to use the body stocking.

After the ride, I was advised by Easy Racers that instead of taking off the body stocking entirely, I might wish to try just loosening its fastenings at the sides of the bike and gathering its edges up a bit. This will decrease problems with crosswinds, allow for a bit more ventilation, yet is even quicker to do and undo than removing the entire stocking.

One can't turn the bike nearly as sharply with the body stocking on (seldom a problem when riding) and one heats up inside the damn thing. I even occasionally got the beginnings of some nerve (palm and fingers) tingling right after putting on the stocking, which I speculate might have resulted from nerve compression due to the stocking being stretched over my arms.

The body stocking remains, in my opinion, a speciality item only for those wishing for very high performance and willing to accept restrictions relating to the whole feel of the ride, ability to view instruments on the handlebars, ability to easily and fully turn the bike when walking it, etc. The Super Zipper fairing takes almost nothing away from the experience of riding the bike, but adds VERY significantly to its aerodynamics.

The AIDSride was the first time that I had ridden 50+ mile rides back to back. During the first three or four days' of the event, I had somewhat aching quadriceps after the days ride. However, by the fourth day my quads toughened up and hurt less. By the end of the event I was almost without aches. Despite being 50 years old and relatively poorly trained, I was keeping up with or passing strong



Marty's Gold Rush + Body stocking



Recumbent friends on the AIDSride

young upright riders on the flats and gentle rollers, and rocketing by them on sustained steep downhills at 52 mph or more... 10 to 20 mph faster than any of the uprights. Of course, there's a price to pay for riding a recumbent... I was passed by nearly every single one of the 2800 other upright riders on sustained uphill stretches.

Each evening the speakers repeatedly referred to sore bottoms, necks, backs, and hands. I suffered none of these. I honestly can't imagine doing this ride on an upright bicycle.

I am in the aftermath of this ride substantially more impressed with what an in all respects winning design Gardner Martin created. And I was, going into the ride, already very much impressed by the design. Thank you, Gardner and Easy Racers, for making my SF to LA AIDSride not only possible, but also entirely pleasurable. ♦

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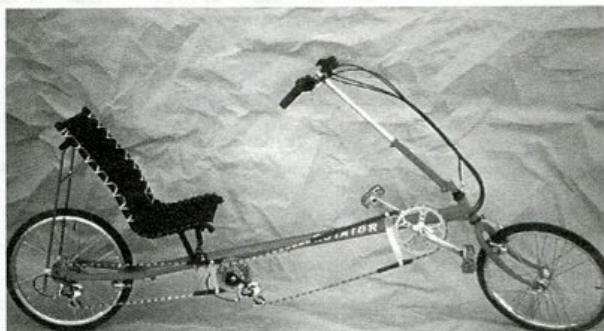
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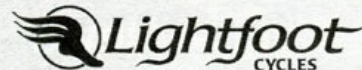
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# Easy Racers: Our Customers Speak

**SUBJECT: How Does That Thing Climb? April 4, 2001**

Just a quick update on the Gold Rush Replica that I purchased about two months ago. Great!!! The weather in Cincinnati is just starting to break. I have over 900 miles on my trainer since February, and about 120 miles on the GRR. With the weather breaking the GRR should see about 150 miles a week.

The GRR becomes more of a blast the more I ride it. I did my first climb out of the river valley where our major bike path is located. Everyone warned me that I would be in trouble on a climb. So I was somewhat apprehensive as I started the 1.5 mile climb out of the valley.

First, I never got out of the middle chainring. I think I could have stayed in the large (53). I held between 13 and 17 mph for most of the climb. I never dropped below 11 mph. I was very impressed. I have climbed this hill hundreds of times on my Trek OCLV and felt far worse at the top of the climb than on the GRR.

As a matter of fact, I felt great on the GRR!!! No back pain; nothing. The ride back down was a hoot. I had a friend with me (about 5 minutes behind me up the hill) as I descended down into the valley. I was hitting 40 mph without moving my legs, and using the brakes into the turns because I was not sure what to expect from the GRR at speed around the turns. My friend had to pedal like a madman and he still couldn't keep up. The GRR felt like a sports car going down the hill. What fun!!! I wish I



*Double Century Man, Ron Bobb, out training for the Terrible Two*

had started this 30 years ago instead of my mid fifties!!!!

Best regards,  
Doug Pendery

**SUBJECT: GRR Update April 25, 2001**

This past Saturday I rode with a few friends that have conventional racing bikes (Wedgies; I think you call them). We climbed out of the valley up the Route 48 hill. This climb goes for about 1.5 miles. I pulled my friends up the hill at about 18 miles per hour and crested at over 20 mph. Needless to say they were out of their saddles trying to stay up. I must say I was winded, but so were they. Their comment was, "I guess your recumbent doesn't have a problem going up

hills."

In my younger days (about 8 years ago) I would have pushed myself to my limit to go 18 miles per hour up this hill on my Trek OCLV. My point is the GRR is a great recumbent. I enjoy going up hills on it more than my OCLV. I am more relaxed, my back doesn't hurt, and my legs aren't killing me from being out of the saddle trying to lever the OCLV up a hill.

By the way, we had a tail wind on one stretch of the ride. I managed to get up to 36 mph in the flats. Nobody passed me....It was a real hoot!!!

Best regards,  
Doug Pendery

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