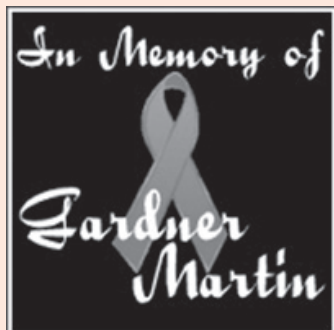


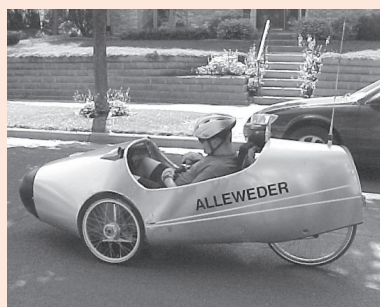
# Recumbent Cyclist News

RCN 086 A Publication by and for Recumbent Enthusiasts Since 1990 Jan./Feb. 2005



Gardner Martin Passes Away  
See pages 3 and 31

Artwork by Stacie Ball  
Courtesy of bentrideronline.com



Living With A Velomobiles  
See page 24



The 2005 Catrike Pocket is available now and retails for \$1,500! This is certain to be one of the hottest new models of the year.

Photo by Larry Varney

## Interbike Report The 2005 Season Preview

By Bob Bryant

In early October the bike industry converges on the desert oasis (aka car hell) of Las Vegas, NV for the Interbike trade show. The show is huge and features road bikes, mountain bikes, bmx, scooters, trailers, components, accessories and recumbents. Not all recumbent manufacturers display their products at Interbike; only those who are serious about selling through dealers make the effort.

Over 1,000 exhibiting brands show to 21,000 retailers, distributors, manufacturers, media, cycling celebrities and industry folks from around the globe. Interbike is held in the Sands Expo and offers a frenzy of manufacturer exhibits, seminars, technical clinics, product presentations, cycling celebrity appearances and industry camaraderie. The show covers 15 acres of floor space!

Interbike lasts for three long days, plus a preview show called the Dirt Demo, where

industry folks get to ride demo bikes at a mountain bike park in Boulder City, NV. There is also a road course specifically for recumbents, located at the best spot at the Dirt Demo: all of the MTB and roadie riders had to walk past the recumbent area to get up the hill to the main area. I've been attending the show for more than a dozen years. This is by far the largest trade-show that I've ever been to, and I think 2004 was the best show to date. Sadly, this show is for industry folks only. It would certainly be nice if the show was opened up to the general public, perhaps just on the last day.

### Chopper Redux

The theme of this year's show was definitely chopper bicycles. This movement has been inspired by the popularity of the chopper motorcycle TV shows such as Orange

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# Recumbent Cyclist News

"A newsletter by and for recumbent bicycle enthusiasts, since 1990."

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## Editorial License: Trends 2005

by Bob Bryant, Publisher  
bob@recumbencyclistnews.com

In 2005 we will most likely see the advance of several trends that have developed over the past few years, including: Semi-recumbents; entry-level LWB (OSS, low BB); affordable trikes; highracers; and — my "wishfull thinking trend" — transportation recumbents.

### Semi-recumbents

(formerly known as Easy Bikes)

The saga of the semi-recumbent/easy bike continues. With the success of Electra Bicycle Company's stylish "Townie" flat-footed cruiser, a host of other mainstream companies are bringing similar bikes to market. At the Interbike bike show, these flat footers were everywhere, and will soon be generally available. The predominant design style is basically a cruiser with a stretched wheelbase and lower seat (mounted further back on the bike) — so riders can easily put their feet on the ground at stops.

We saw bikes from Electra, Giant, Sun (the new Sunray), Trek and Fuji, and heard rumors of a Raleigh variant. Giant even has EZ Bikes for kids. Trek has a line of "Sole Bikes" that were basically altered cruisers with a backrest. Trek does have an awesome \$1000 1-speed cruiser bike made with a CNC aluminum frame called the "Rail."

The cool factor still goes to the Electra Townie and the Electra Rat Rod. While perhaps lacking in the style department, the best ride on a semi-recumbent was the new Day 6 Dream from Lightfoot Cycles. If you want auxiliary power, the Giant Revive with optional electric assist is the ticket. The award for best enthusiast semi-recumbent/easy bike goes to Randy Schlitter of RANS and his newly redesigned line of Fusion bikes. There is a model for cruising, one for off-road or fire trails, and a performance road model. The higher-end models even allow you to stand up to climb hills, while taking advantage of the improved aerodynamics down low for flat-land cruising. RANS did what most others haven't done: they designed a comfortable and lightweight seat specifically for the bike. Most other manufacturers are using heavy cruiser-type saddles or worse yet, adding an uncomfortable back rest to a cruiser saddle.

Semi-recumbent/easy bikes meld the style of the classic cruiser bike with the most marketable benefits of a recumbent into a bike that can be easily sold in bike shops without requiring the bike shop personnel to become experts in the wide open and experimental field of recumbent bicycles. There is just too much to know about recumbents for most bike shops

to get a grasp in a short time. Be aware that many of these bikes are stylish poser bikes and not designed for serious commuting. You won't get a serious bicycle for \$400.

### Entry Level Long Wheelbase

(over-seat steering with low BB)

Recumbency finally has several affordable easy-to-ride and easy-to-purchase LWB recumbents. The LWB is now the king of the entry level market segment. With the low-moderate seat heights, over-seat handlebars, and full size rear wheels, the bikes look good and are easy to ride. There are three main manufacturers offering more than a dozen models priced from \$700 to over \$2,000: Burley, Cycle Genius and Sun. The RANS V2 is also a fine value. Fancier models from RANS, Easy Racers and Lightfoot have special niches and go up in price to over \$5,000.

Since the demise of BikeE, the once-popular compact long wheelbase (CLWB) has yet to regain its prominence in the industry, though these bikes make excellent urban commuters. Maxarya, Sun, HP Velotechnik, RANS and Cannondale all offer CLWB models.

Some feel that the small wheels are a sales detractor. However, these bikes are more compact than a LWB which equates to easier storage, transporting, they are taller and more visible and the more compact wheelbase makes them more agile. We're looking forward to testing a few more CLWB bikes in 2005.

### Affordable Trikes

The fastest growing segment in the recumbent world has to be trikes. The past two seasons have seen some tremendous new affordable options. The bare minimum for a lightweight daily rider enthusiast trike is \$1,500 for the Catrike Pocket or \$1,900 for the WizWheelz TT 3.6. Moving past \$2,000 gets you an upgraded model or upgraded specs. Move toward \$2,500 and you can get Greenspeed's GT-3 folding trike. \$3,000 moves you into the upper echelon of Catrike (racers, tourers) and WizWheelz (aluminum and carbon-fiber) or to the ICE "T" or "Q". It still takes \$4,000 or more to get the fine performance and touring machines from ICE, Greenspeed and Windcheetah. The imported trikes are getting more expensive due to the international currency exchange (Euro and Pound). This makes American trikes look like excellent bargains.

Several dealers told us that Catrikes is the most popular recumbent in their store. My local dealer (Silverdale Cyclery, the ONLY

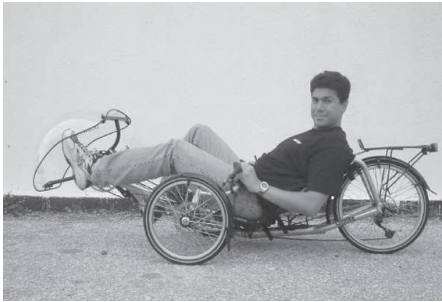
*Continued on page 27*



**Giant's Suede** semi-recumbent cruiser is under \$400. These "easy bikes" have become mainstream in the last year.



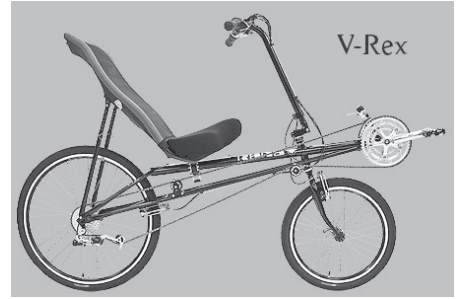
The Sun **EZ Sport AX** (left, \$1295) and **EZ1 AX** (right, \$825) remain the best choices in the Sun line for value in an entry level enthusiast recumbent.



Catrike's Paulo Camasmie is the king of affordable enthusiast trikes. Here he is on a **Catrike Speed** with a Windwrap XT fairing. This fairing fits both trikes and highracers, and keeps your feet warm on a cold day.



The **Barcroft Dakota** (above) is an excellent American style SWB OSS. The **RANS V-Rex** (above, right) is more of an all around SWB. Both are very capable sport and touring SWB OSS machines



The **RANS V2 Formula** (right) is a true road-bike like LWB OSS. The aluminum frame is light and stiff, which transfers power direct to the pedals in an instant.



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# Recumbent News

## Gardner Martin Passes Away

In Mid October we received the following note from Sandra Martin of Easy Racers, Inc.

The recumbent community has lost its most ardent supporter. After a long, long, battle with mantle cell lymphoma Gardner Martin has left us. He was hospitalized for the last few days and suffered very little pain. We miss him sorely.

Please, no flowers. Gardner hated funeral flowers. In-lieu of flowers you can send a check to the GARDNER MARTIN MEMORIAL FUND, which will be used for cash prizes at HPV race events. Or give a check in memory of Gardner to your favorite charity.

As to Easy Racers, we will continue, just as always, just as he would expect. Mac, his brother; Gabe, his 1st Lieutenant; Manual, our Production Foreman; Robin, our Office Manager; the rest of the crew, and I are all here and all committed to continue with Gardner-level quality in our bikes and our customer service. We are also committed to continuing innovation and evolution through research, testing and racing, just as he was. Easy Racers was Gardner's life and we intend to keep it strong and growing. But, please forgive us if our responses are a little slow for the next few days.

His final words were "Grow recumbent — faster."

Be good to each other,  
Sandra Martin, Easy Racers, Inc.

If you want to send e-mail condolences, please send them to [condolences@easyracers.com](mailto:condolences@easyracers.com).

**Editor's Note:** See the inside back cover for a related story.

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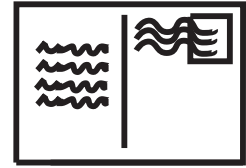
Rider: John Schlitter  
Age: 47  
Bike: Bacchetta Aero  
Event: 2004 Bike Across Florida  
Distance: 167 miles  
Finish: First, 6:34:10 (course record)

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# Letters To RCN

We want to hear what you have to say!

letters@recumbentcyclistnews.com



## My New Giro

Recumbent Cyclist News was an invaluable resource to me in my recumbent purchase decision last year. In May of 2004, I bought my first bike in 40 years — a Bacchetta Giro. It has opened all kinds of new opportunities for me, including an extended tour this past summer. Making the decision to buy a recumbent, and then choosing the Giro, was not easy, although this was one of those pleasant challenges. Your magazine was very helpful. I won't argue the benefits of the Giro over other SWB bikes as I don't have the experience or expertise, but I'm damn happy with my choice.

Mike Nagan

## 'Bent Evolution

The plethora of recent bent offerings reminds me of how nature got certain aberrations out of her system, as is revealed by the weird looking fossils being dug up and placed in museums. Some early models, shark and crocodiles, are still with us, after millions of years. Their equivalents in the bent world would be the Easy Racers and Tim Brummer Lightnings. Many bents die out because of design, materials, construction, and company support. However, others, of fine quality: Counterpoint Presto, BikeE and Vision terminate, I can only guess, by reason of management problems. With Vision I did what I could by owning three of them. I still have an R-40 and what I consider the finest recumbent ever made (for me), the Saber R-64.

I think Easy Racers and Lightning could thrive another twenty years on their performance reputations alone. I see the flood of cheap imported 'bents winding up hanging from garage ceilings alongside the equally unrideable diamond frames.

Youngsters may ride pain inducing death machines just for the novelty. However, older and more discriminating (most of us are 50+ years old) want comfort, quality and efficiency.

At age 65, I have found a bit of a second wind in the light weight, narrow high pressure tires and efficient riding position of my Saber. I have reclaimed much of my past over all speed, climbing ability, and best of all at the end of a good long ride, the incredible efficiency and comfort helps me find the energy and ease to get my aged body home and savoring the ride afterwards. I still have a trike in mind, but only after I get really old and too unstable to ride a two wheeler.

A fellow traveler  
Roger Fuller

*Editor Comments: Lightning was not at Interbike this year. We contacted them for 2005 news and info. They did respond that they would contact us when information becomes available. We have not heard back from them.*

## Touring on a Recumbent

I have been a cyclist for almost 30 years but I have only been riding a recumbent for the past two years. Before switching to a recumbent I did a lot fully loaded long distance touring. I currently ride a short wheelbase Vision Saber recumbent which is both fast and fun to ride. However, it is clearly not appropriate for fully loaded long distance touring. Consequently, I'm interested in purchasing a second recumbent specifically for fully loaded long distance touring. The problem is that I have found very little information about loaded long distance touring on recumbents. Plus, the information I've found is inconsistent. It would be great if your magazine could do a review of recumbents for fully loaded long distance touring and make recommendations. I think a constituency exists that would find this of interest.

Andrew Beckerman-Rodau  
arodau@suffolk.edu

*Editor Comments: Your points are all well taken. There are very few recumbents are designed for fully loaded long distance touring. Our guidelines are similar to what you'd find for upright touring bikes:*

- Longer wheelbase (long SWB is fine)
- Stiff, preferably steel triangulated frame
- Durable touring wheels and tires
- Cargo capacity ( front rack, rear rack, or under-seat rack)
- Or Towing capability

*The LWB models that come to mind are the: Easy Racer Tour Easy, RANS Stratus, V2 and Lightfoot Ranger. There are SWB models which can be used for touring: HP Velo, Barcroft, RANS V-Rex, and others. Of these HP Velo offers the most serious touring options. Bacchetta and Volae (stick/non triangulated frames) and monotube LWB (like Burley) can be used with amidship racks, or two-wheeled touring trailers. RCN advertiser Angletech also does several "custom spec" recumbent touring bikes. Greenspeed, ICE, and perhaps others build expedition level tadpoles. Hase and Lightfoot build touring deltas. Touring can certainly be done on more entry level trikes, but we can't list ever model.*

## Trikes & Quads

Great article about the Crank-It quad! The two extremes of 4-wheel HPV design are anchored by Crank-it and Rhoades Car, and I split the difference. It's too bad the Crank-it guys aren't interested in a general-use variant of their design, but I hope they manage to generate interest in quads, as opposed to trikes.

I've overcome the problem of customizing the fit of hard-shell seats, which you complained about with the Crank-it, on my Quad Rod. I use the HP Velo seat at a relatively high angle, and I was experiencing the same neck discomfort that you describe. I made two wedges, one for the neck area and one for the base, which attach to the shell, under the cover, with velcro, and can be adjusted to suit. It works perfectly. I was disappointed that you included Ian Sim's "Ute" on your wish list. It's a totally inept concept, and those "designer" tail boxes look like outboard motors from the 50s. But to each his/her own.

Pippa Garner

*Editor Comments: See Pippa's article on her quad recumbents in RCN 080, page 24.*

## EZ Sport Update

It has been five weeks since I bought my EZ Sport AX and I sure wish I'd bought one of these a long time ago. I've ridden almost every day, expanding my riding domain as I get more experience. I found out we have a new metro park just 2.5 miles from the house with about 9 miles of multi-use trails.

I'm starting to think about how I can ride this thing to work but I've got to drop my daughter at the bus stop in the morning for now. Next summer though should be a good time to try; only about a 35 minute ride.

The first few times I rode this bike I was looking for the seat belt. I've now added front and rear lights, a side mirror, couple of water

Letters continued on page 28

## Send Letters to the Editor of RCN

If you have something to say, a differing viewpoint or experience—we want to hear from you! **Please limit letters to 300 words.** RCN reserves the right to edit submissions for clarity, content, and space limitations. Please send to [bob@recumbentcyclistnews.com](mailto:bob@recumbentcyclistnews.com) or RCN, PO Box 2048, Port Townsend, WA 98368



Bacchetta's 2005 Giro26 © John Riley



The Bacchetta Strada highracer © John Riley



Bacchetta's prototype tandem © John Riley



A RANS Fusion commuter/tourer

2005 Season Preview: Cover story continued . . .

County Choppers, Biker Buildups, Monster Garage and others. The wild popularity of the Schwinn Stingray line of bikes (including a few more models for 2005) has also contributed to this movement. The one thing these choppers have in common — and that separates them from the recumbent world — is that they ARE NOT comfortable. The bottom line is that choppers are for posers. The recumbent folks I know react to choppers with big yawns. We've been riding chopper-style LWB recumbents for more than two decades. The difference is that ours are fast, comfortable and easy to ride. Perhaps these posers object to the recumbent "lawn chair" look. I know only one point at which the chopper thing crosses paths with an actual comfortable bicycle: the Electra Townie, which is a wonderful riding, smooth and stylish bike.

## Recumbents 2005

For a recumbent manufacturer, bringing your staff and products to Interbike is a huge and expensive deal. The ones who come are the leaders in our industry.

The theme for 2005 for most of the recumbent builders at the show was product refinement and carefully segmenting product lines into one of several use and design-style categories: recreational, commuting, touring, off-road, performance and racing. This will definitely make it easier for customers (and media) to figure out which bike is best for them, for their riding style and for their home terrain. There are still a few confusing lines, but for the most part recumbents are getting easier for customers to buy and for dealers to sell.

## Bacchetta

There is no doubt that the most two-wheel recumbent action at the show was at the Bacchetta booth. Besides an opportunity to hang out with recumbent gurus and industry celebrities John Schlitter, Mark Colliton and Rich Pinto, there was much new at the booth of the Killer Bee team.

To start with, Bacchetta has segmented the line by riding style to make it easier for customers to choose a bike. The Giro and the Giro 26 are commuter/tourers; the Strada and Corsa are sport/road models; and the Aero and Basso are the racing models.

**Giro** (\$1,550): This is the mainstay of the Bacchetta line — a next generation SWB OSS recumbent. The Giro is the understated bike of the line while most of the buzz goes to its highracer relatives. The fact of the matter is that most regular cyclists will find what they need in the Giro. For 2005 the Giro has a 26/20 wheel combination, black stem, riser, bars and seat stays, a new black aluminum fork (with disc tabs front and rear). There is also a second Giro model that has dual big 26" wheels. This is the highracer for the rest of us. I'm riding one right now and love it!

**Strada** (\$1,850/\$1,900): This popular model has received many refinements for 2005. First of all, it is now available with the ReCurve mesh seat or the optional Euro shell (+\$50). A Truativ Rouleur crank and Giga pipe X bottom bracket are also new. Wide range 11-32 gearing is now standard (YES!). The bike comes with an X.9 drivetrain and Formula Xero Lite 650c wheels. The frame has aero-style chainstays, a carbon fiber fork (aluminum steerer), black riser, stem, seat stays and bars and a new Bacchetta stem. Starting this spring we'll also see an updated seat clamp (2 quick releases) and tape-wrapped handlebars. "This is the bike in our line that we're most excited about," says Bacchetta's Mike Wilkerson. The updates were made to more directly compete with highracer competition from Volae and RANS in this price range.

**Corsa** (\$N.A.): The Corsa as we know it is gone. A new aluminum version made for Bacchetta by Kinesis is being tested and is expected to come to market. The new aluminum frame will cut the weight of the old steel Corsa (26 pounds) by 2.4-2.6 pounds.

**Aero/Basso** (\$3,900/\$3,850): The flagship of the Bacchetta line gets

a new carbon fiber fork that will shave 1/2 pound from the bike. Bacchetta also showed a very trick Euro-style framed mesh seat (the same shape as an M5 Euro shell seat). It is very light, but not quite as light as a carbon-fiber shell. The seat will be used in conjunction with the breathable foam found on the Aero seat.

**Prototypes:** Bacchetta showed three new prototypes at the show. The first was a new tandem, followed by a LWB and a MWB designated as entry level models.

The tandem is gorgeous with its triple-diamond frame design and over-sized black aluminum frame; and the rear triangle folds and removes for shipping. I rode the tandem and it is sweet. Watch for it late next summer (\$4,000-\$5,000).

Bacchetta offers what they call a "Café" medium wheelbase (MWB). The frame is a stretched-out Giro. This bike gives you SWB-like handling, with a bit more stability and user-friendliness. This would make an ideal town bike, and signals another new creative direction for Bacchetta. It was my favorite new two-wheeled ride at the show.

A possible new entry level Bacchetta is a 26/20 LWB OSS with a simple monotube frame and wide cow-horn cruiser-style bars. This bike was sweet riding and user-friendly, and different than what is being offered by other companies. The target price for both of the new entry level bikes is around \$1,100.

Bacchetta also showed a very cool mesh seat shaped like a Euro shell.

**Weights & Mashers:** Since I'm considering a highracer for myself, I asked for help in choosing one. Mark Colliton told me that many riders jump to the conclusion that they must buy an Aero because it's the lightest and fastest. While it is a very fine bike, the Aero's frame may be a bit too lively for some heavier riders or mashers. Mark said that "mashers" over 200 pounds or "finesse peddlers" over 225 pounds should consider the newly upgraded steel Strada. Since I fit into this group (220-pound masher), my titanium dreams ended, but the new Strada is a beauty.

Contact: [www.bacchettabikes.com](http://www.bacchettabikes.com).

## Burley

Burley had a good year in recumbents with the introduction of the Koosah/Jett Creek LWB low-crank recumbents. Burley has expanded this line to six models for 2005, including four hard-tails and two with rear suspension:

**Sand Point** (\$749): This is a new model for 2005 with downgraded specs, including a Sunrace 8/24-speed drivetrain.

**Koosah** (\$999): This model reportedly outsold all other Burley recumbent models in 2004 and remains mostly unchanged with its 8/24-speed Shimano, Truvativ, Sunrace components, but the price has gone up.

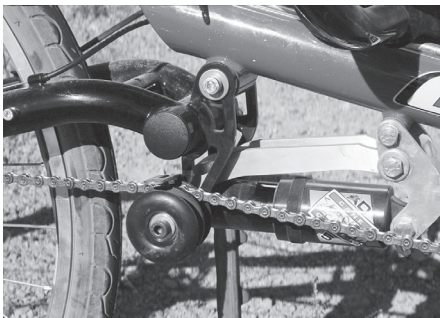
**Jett Creek** \$1,299: This model gets bumped



*Bacchetta's prototype MWB shown at the Interbike Dirt Demo  
© John Riley*



*The new Burley Nasoke/Spider  
© John Riley*



*The Burley Nasoke/Spider has a unique new rear air shock adjustable suspension. I still haven't figured out how it works. © John Riley*



*Bacchetta's prototype entry level 26/20 LWB OSS recumbent had a stick frame, cow-horn cruiser bars and that supremely comfortable Bacchetta ReCurve seat © John Riley*

up to a 9/27-speed (with Rapidfire shifters!) for 2005 and has other slight upgrades from the Jett Creek. It still has the Truvativ Touro/Shimano/Sunrace drivetrain.

**Adirondack** (\$1,999): This is the high-end Burley hard-tail with a Truvativ Rouleur crankset, Shimano XT rear derailleur and 9/27-speed Rapidfire shifters, a rear disc brake and front Avid V-brake. The wheel set is Velocity Thracian. The bad news is that Burley is still using a Sunrace cassette and chain, even on this \$2,000 bike.

Two completely new suspension models have taken the place of the discontinued Limbo. These bikes are patterned after the above models but have rear suspension. Burley's unique suspension is unlike anything I've ever seen: imagine the Koosah frame with a hinge at the mainframe/rear stay joint. An aluminum linkage and air shock are under the mainframe. These are the:

**Nasoke** (\$1,399): The Nasoke is essentially a Jett Creek with rear suspension.

**Spider** (\$1,799): The Spider is a Koosah with rear suspension.

Burley continues to offer the convertible LWB/SWB **Canto** (\$1,199) and **Taiko** (\$1,999) and, in the SWB line, the **Django** (\$1,199) and the **HepCat** (\$1,999). The downside to these bikes is that they are all using Sunrace cassettes and chains.

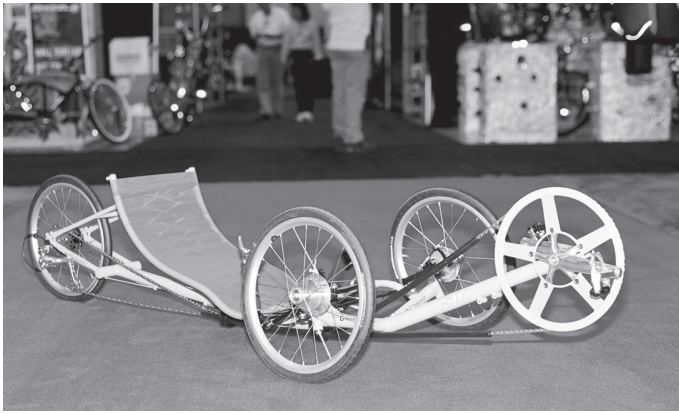
Burley will be introducing two new seat bags. The larger of the two mounts to the seat cap. The second bag rides lower on the seat back. It straps to the upper seat back cross support and to a third mount on the lower support bar. This triangular bag is rather small and may be best used as a hydration bag.

We also got to see a pair of new and completely different prototype seats that are in the works. We're hearing rumblings about a new model, perhaps a dual 26" wheeled SWB.

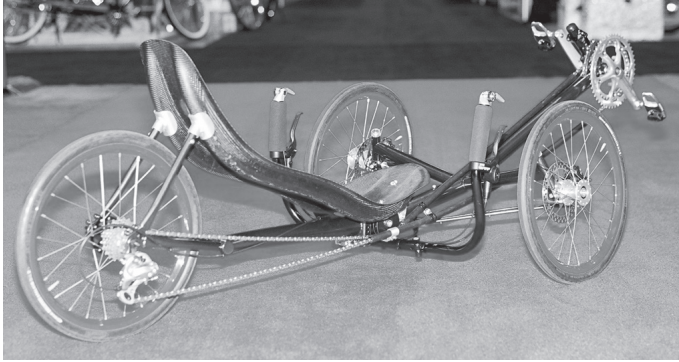
Burley also builds some of the best bicycle trailers on earth. We reviewed the Nomad last year in RCN 071. This two-wheel trailer flies under the radar with a lot of buzz still around the one-wheeled variety of trailer. The Nomad is an exceptional touring trailer and is my personal favorite. For 2005 Burley has added an optional aluminum cargo rack that fits over the top of the trailer so you can carry more stuff (around \$60 retail).

Burley also has a new Nor'wester Recumbent jacket designed for reliable weather protection. The jacket is a seam-sealed Anorak-style jacket made from Burley's Gelanots™ fabric and comes with waterproof underarm zippers and a drawstring bottom. The jacket comes in yellow/black or blue/black and is available in sizes small-XXL. I own a Burley Rock Point rain jacket and I really like everything about it (except the \$144 I paid for it at my local bike shop).

Contact: [www.burley.com](http://www.burley.com).



The Greenspeed SLR — so cool! Mark Mueller (Windwrap) commutes on one daily. © John Riley



Greenspeed's folding technology will come to race trikes in the next few years. This was the prototype GT-9 with a shell seat! © John Riley



The 26-pound \$1500 Catrike Pocket will be one of the most popular trikes in North America © John Riley



## Catrike

The Catrike from Paulo Camasmie's Big Cat HPV has quickly become the North American industry leader in affordable enthusiast recumbent trikes. The prices are affordable, nearly half what the competition charges for a similar model. Catrike can do this because the trikes are aluminum, built in quantity here in the US, and are based on a cost-effective design. Catrike is currently building 100 trikes per month, and expects to produce 300 per month. For 2005, Catrike has unveiled a new entry level micro trike called the Pocket, and will soon unveil an updated version of their racey Speed model. The Road pretty much remains the same, with some minor refinements.

**Pocket (\$1,500):** This super-value Catrike has a 33" wheelbase, three 16" wheels, an aluminum frame (with heat treated boom), Avid disc brakes, a Shimano Tiagra 24-speed drivetrain and a Truvativ Touro triple crank. The Pocket model weighs just 26 pounds. The Pocket has a 45° seat angle (fairly upright) and will fit riders up to a 45" x-seam. This trike got a lot of attention at Interbike. One dealer we know told us the Speed is the best seller in his shop, but he ordered a half-dozen Pockets at the show.


**The Road (\$2,350):** This is the best selling model in the Catrike fleet. It has a similar aluminum frame, but a more upright seat angle and three 20" 406 mm wheels. The 2005 models will be available in March and they will have kingpin headsets.

**Catrike Speed (\$2,350):** This newly updated model will be available in February 2005. The frame will be fully heat treated aluminum, it will have upgraded components, higher gearing and a 20" 451 mm rear wheel, two 16" 349 mm front wheels, kingpin headsets, and an included neck rest. Two new Catrike models shown at the show, the Expedition and Competition have been put on hold for now.

Designer Paulo Camasmie and Catrike are working with Alcoa and have designed a special 6061 tubing as well as a process to make the frames even tougher. Paulo is one of the "good guys" in our industry and by his own admission he is trying to do the right thing. His mission is to produce affordable sporting trikes for the masses. He'll admit to having been on a learning curve during the last few years. We've seen his company grow by leaps and bounds, and the quality of the trikes has improved immensely.

Catrike is located in the Orlando, Florida area. There are 10 employees, and Catrike pays decent wages with full benefits. The website has a very active bulletin board that gets over 1,400 hits per day and the company is said to receive over 99% positive feedback on their products. In a somewhat unrelated note, I was excited to hear that Catrike uses hand-built wheels with Sun rims on their trikes, which is downright amazing in this price range. Paulo is also very interested in getting a "short-track" trike racing circuit going in the US.


Contact: [www.catrike.com](http://www.catrike.com).




Easy Racers designed EZ-Series recumbents are a pleasure to ride. You sit slightly reclined, back fully-supported, arms relaxed, neck straight, in a normal sitting position. Compare this with the contorted riding position on a diamond-frame bike. Even after a long day of touring, you're still riding in comfort. No more stiff neck, aching back, numb hands or crotch. No straining either. From cross-country touring to daily commuting to world speed records, Easy Racers has been the leader in recumbent design for over 22 years. And now with the EZ-Series line of recumbents, designed by Gardner Martin, the doors have opened up for entry level riders.

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EZ-Series Recumbents are distributed by Sun Bicycle Co./J&B Importers and available from most bicycle shops. [www.sunbicycles.com](http://www.sunbicycles.com) / [www.jbimporters.com](http://www.jbimporters.com)



## Cycle Genius

The self-professed geniuses from Texas have been busy the last few months simplifying and segmenting their line to make it easier to choose one of their bikes.

The most notable change is the switch in emphasis from their unique SWB/MWB designs (CGX, etc.) to the RDX and LTX LWB models and a new LWB-style STX. The STX, or Sparrow, was formerly a SWB/MWB.

The **STX Sparrow** (\$699): is an entry level low bottom bracket dual 20" wheel LWB with a 54" wheelbase and CGX style bars (instead of T bars). This new model comes with a stylish frame with some curved tubes and fenders. The STX offers a comfortable relaxed ride with an emphasis on user-friendliness. The new STX should give the Sun models some hot competition.

**CGX Starling** (\$499): This is CG's entry level SWB/MWB 20"/16" economy model and the only bike of its type in the CG line.

**RDX Raven** (\$1,399): A 700c/20" 451 mm LWB "race" model. This bike gets a different front derailleur, and perhaps a 406 mm 20" front wheel. New Easy Racer style bars in anodized black (YES!) are optional. Paired spoke wheels are optional.

**LTX Falcon** (\$1,049): The LTX shares the LWB RDX frame, but this touring model has a cromoly front fork and a 26"/20" wheel combo and disc brakes.

**TRX Phoenix** (\$1,499): CG showed an entry level tadpole trike that will be available in the summer of 2005. This is a rather tall, low-crank tadpole trike. The design emphasizes ease of entry and exit. The trike has a crankset-style mid-drive and a unique direct steering (from the front wheel headsets) that can be either low (USS) or high (tweaner). The reported target weight for this trike is 35 pounds. CG's Danny Savitzky says, "this is absolutely NOT a performance model. I don't want customers comparing it to Greenspeed or Catrike."

All of the CG bikes come with the same 6-way adjustable mesh/foam base seat.

Contact: [www.cyclegenius.com](http://www.cyclegenius.com).

## Greenspeed

The Australian Greenspeed trikes are among the finest in the world. The technology coming from this company is exceptional and every other builder should be paying attention. The Greenspeed line now consists of 14 different models segmented into recreational/commuting, touring, sport and racing categories. Within these categories there are folding models (16" wheels), touring models (20" wheels) and sport models (16" or 20" wheels). Greenspeed also varies seat recline angles by type: The GT-3/GT-5 have 40° seat angles; the GTS has a 30°; the GTX is 25°.

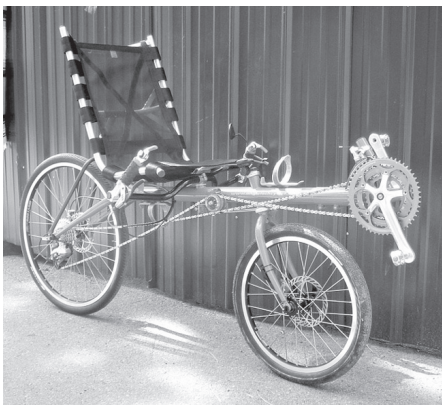
The 2005 Greenspeed catalog offers invaluable information to help you select the perfect trike for you. The lineup is as follows: **GT-3**



*The 2005 \$699 Cycle Genius STX. The previous STX was a 20/16 CLWB. This is a completely new bike with a previously used name*  
© John Riley



*The 2005 1/2 Cycle Genius tadpole trike*  
© John Riley



*While Haluzak seems to have dropped off the face of the recumbent planet, Angletech offers a model with a shorter boom, and the seat moved back, custom painted and spec'ed.*



*The Electra Townie 24 is \$470*

16/16 (\$2,595): No changes, but Greenspeed will be introducing several other folding trikes; **GT-5** 16/16 (\$2,995): This is a GT-3 with disc brakes, a 105 crank, and a Shimano Capreo drivetrain; **GTR** 20/20 Touring trike (\$4,250); **GTO** 20/20 Touring/Travel trike (\$4,250); **GTC** 16/16 Compact Touring trike (\$4,250); **GTS** Sports Touring trike (\$4,950); **GTX** 16/16 Sports trike (\$4,950); **GTT** (\$7,950): This trike sports a very cool TA tandem crankset; **SLR**: Greenspeed showed the SLR super low racing trike. This is a stretched wheelbase trike that weighs just 25 pounds. The SLR has a trick side-stick steering where the right lever pivots off the seat frame and connects to linkage that steers the slightly cambered front wheels. The left lever is a dummy used to hold you into this rocket ship.

The GT3/5 folding technology will be carried forward to the **GT-7** and **GT-9** performance trikes in the coming years. One of these trikes was shown at the show with a carbon fiber shell seat.

**New Tires:** Greenspeed introduced its own "Scorcher" line of tires. This 16" x 1.5" 349 mm tire is made by Duro and comes in three models: regular rubber, soft and puncture proof. The tire looks like a high quality miniature version of the beloved Comp Pool. A 406 mm 20" model is coming as well. Greenspeed's Ian Sims had this to say about the new tires: "The Scorchers were specially designed to give BOTH a better ride AND better rolling resistance than the best 16" tires currently available. They are the result of 12 years of tyre testing at Greenspeed and have been designed especially for trikes. However, these first Greenspeed tyres will also suit bikes, and are not radial. Being suitable for bikes will give us a wider market for these tires."

Greenspeed has upgraded the kingpin bushings. They were formerly bronze, and now they are acetate graphite.

Contact: [www.greenspeed.com.au](http://www.greenspeed.com.au).

## Hase

The German delta trike maker continues to refine the flagship **Kettweisel** delta sport trike (\$2,690). For off-road and wet weather commuters, a new two-wheel drive model called the **Kettweisel Ride** (\$3,450) adds a rear U-joint differential. The **TT** (\$4,950-\$6,750) is a new titanium model, that weighs 26 pounds.

Hase has also introduced a LWB USS dual 20" wheel **Tagun** touring recumbent (\$2,550). This new recumbent has rear suspension and a front suspension is available (\$230).

The folding **Lepus** delta trike (\$3,890) has been updated for 2005 and shares a rear suspension with the Tagun LWB USS. The mid-drive is gone, and Rohloff or Shimano Nexus hubs are optional.

Contact: [www.hasebikes.com](http://www.hasebikes.com).

## HP Velotechnik

HP Velotechnik's specialty is full suspension and under-seat steering (USS). Both systems are offered throughout their line in a very refined way. HP Velotechnik's "No Squat" suspension is the finest in our industry. The USS is a wonderful option that is becoming rare these days. HP Velo also continues to push the envelope in recumbent comfort. The laid-back touring bikes are indeed comfortable, and the new BodyLink seat is the finest and the most comfortable Euro shell seat made. It isn't a racing seat; it's meant as a touring and sport riding seat. It is very adjustable and is the finest in its class.

For 2005 HP Velo has introduced a new model, the **Street Machine GTe** (\$2,199). This model has the same design as the Street Machine GT, but a lighter aluminum frame saves about two pounds. The GTE comes standard with front and rear suspension and USS (an OSS FlexStem is optional). Another upgrade for 2005 is the use of the fine Avid mechanical disc brakes. They are available on all HP Velo bikes. HP Velo is also using double-wall Alex rims on their bikes.

Other new details include internal cable routing, an oversize custom chain idler with a more elegant mounting system and new drop-outs with a recessed kickstand mount (with bolt holes drilled all of the way through). There is also a new water bottle cage mounting system that holds two bottles angled out from behind the seat. HP Velo is also offering short arm cranks down to 155 mm (for riders under 5'7"; 170 mm is standard).

The **Street Machine GT** (\$2,199) with its steel frame and classic seat is still available. HP Velo feels that some touring riders will prefer a steel frame since it can be repaired anywhere. However, HP Velo hasn't had any durability problems with any models that we

**Spirit** (\$1,450): This CLWB model makes a fantastic urban commuter. New for 2005 are some new component choices and a lower starting price. The Spirit is now an eight-speed with optional Dual Drive 24-speed (+\$219) or Rohloff 14-speed (+\$1,099). Avid V-brakes are now standard, and twin Avid discs are optional (+\$179). The rear suspension has been beefed up to a 150 mm shock instead of 125 mm.

HP Velo has a new optional reversible folding stem (FlexStem +\$179) for the Spirit. You turn the front wheel around and the handlebar folds down along the frame. With the seat removed, it folds to 29" x 65" and makes for a more compact package.

A Radical Design seat bag is available for the Spirit (\$199). It has been custom designed to hug the recline angle of the seat and the rear rack. This huge bag fits perfectly to the back of the Spirit. It's wedge-shaped and somewhat aerodynamic. A fiberglass bar helps hold its shape.

The SWB OSS **GrassHopper** (\$2,199) (or



*The HP Velo Spirit has a new folding OSS unit, new optional bag, as well as new spec and price for 2005*



*The aluminum HP Velo GTe comes with the comfy BodyLink seat*



*The Day6 Dream © John Riley*



*The new Lightfoot Traveler, note higher cranks. © John Riley*

optional USS) model was unveiled last year. It also gets Avid disc brakes and the new chain idler. The Speedmachine is now \$2,690.

Contact: [www.hpvelotechnik.com](http://www.hpvelotechnik.com).

## Lightfoot

Lightfoot had several models on display including the Ranger, a slick delta trike, the new Traveler model and the Day6 Dream Easy Bike.

The **Traveler** (\$2,250) boasts dual 26" wheels, a 2" taller seat and a 3" shorter wheelbase than the flagship Ranger model. This taller seat and pedals allow riders to recline more. The rider's weight is moved back on the bike. It has a more neutral road feel and fits riders 5'7"-6'3". A 26/20 model on display at the show (the Cross Country) has been put on hold.

Lightfoot's dual 26" wheel **Ranger** (\$1,960) is the most popular model. It's more versatile, and can be set up for road or off-road use with just a tire swap. The Lightfoot seat is lower than the Traveler and Ranger.

Lightfoot has a line of very tough delta trikes including a great all-around trike called the **Greenway** (\$1,975-\$2,652); the **Roadrunner** (\$2,652), which is wider, more stable and works very well for bigger and taller folks; the **Courier** (\$2652) which is longer, with more cargo room for touring or for a child carrier; and the **Magnum** (\$2,880), the toughest Lightfoot trike for riders to 6'11" and 450 pounds!

Two new companies have split off from Lightfoot. Day6 will build the new Easy Bike and One World will build the Transporter, Haulway, Pedicab, Microcar (not currently available) and work bikes.

**Day6 Semi-Recumbent** (\$700): The Day 6 Dream was developed by Kelly Hutson, a bicycle industry newcomer whose background is in the wheelchair seat pad industry, and by Rod Miner of Lightfoot Cycles. The Lightfoot influence is noticeable immediately in the bars and dual 26" wheels. A low step-through frame allows easy entry and exit. A standard cruiser-style seat or optional very comfortable luxury seat are available. While some riders may not initially be excited by this bike (no flashy paint jobs like Electra), the ride is very smooth and comfortable and the steering geometry is well thought out.

Contact: [www.lightfootcycles.com](http://www.lightfootcycles.com), [www.day6bicycles.com](http://www.day6bicycles.com).

## RANS

The big news at RANS is a line of semi-recumbent dual 26-inch wheel Fusion bikes. There are four models ranging from \$895 to \$1,995. The **Fusion** (\$895) and **Cruz** (\$995), have a more laid-back seat tube (stand up riding not intended). The **Dyanamik** (\$1,045) and **Zenetik** (\$1,995) are more aggressive with steeper seat tubes and more of a stretch to the

bars. The Dynamik is a mixed-terrain bike with fatter off-road style tires and a cushy shock-absorbing seat. The frame is TIG cromoly with a blue powdercoat finish and disc brakes. The Zenetik is the Fusion roadie. It is available in white powdercoat and has Velocity paired-spoke wheels and a lighter carbon fiber seat that saves .4 pounds. The bikes are all fun to ride. To say that Randy Schlitter is excited and committed to his style of EZ bike is an understatement. RANS has an article called "Awesome Foursome" on the website devoted to the new Fusion line: [www.ransbikes.com/ITRComfy.htm](http://www.ransbikes.com/ITRComfy.htm).

RANS continues to refine and update the line. The first update is a slight change to their standard seat frame which has improved seat comfort, "Some riders had called our attention to tail-bone numbness, so we beta tested a solution and now have applied it across the board," says RANS Randy Schlitter. RANS Rad-Loc seat adjustment mechanism has also been recently updated. In a mid-2004 change, RANS is now injection molded Radlocs which makes them lighter and grip better.

SWB: **Rocket** (\$1,174) and available in red again; **V-Rex** (\$1,699); **Force 5 LE** (\$1,695); Force 5 XP (from \$2,295). LWB: **Tailwind** (\$1,074); **Stratus** (\$1,699); **Velocity<sup>2</sup>** (\$1,349); **Velocity<sup>2</sup> Formula** (\$2,395). Tandems: **Screamer Sport** (\$3,499); Screamer (\$4,399); and Screamer TR (\$4,999). XL-sized versions are available for most models.

The Rocket, V-Rex and Force 5 models can all be ordered with optional M5 fiberglass seats (\$100). RANS also offers the carbon fiber pan and Zephyr seat options. Several of the cromoly models are now built with Reynolds 500 tubing, which is a higher grade of cromoly similar to what RANS uses in their aircraft.

The Screamer gets redesigned sprint braces (seat struts), an FSA crankset and bolt-on stoker USS bars.

**Rumors:** RANS' Randy Schlitter continues to talk about a dual 26 and/or 700c V2 Formula. He is also very happy with Force 5 frames and would like to use this technology for future SWB line updates. A 30th Anniversary made in the USA Stratus is planned. RANS will spec this classic LWB model with a carbon fiber version of the original RANS "bucket" seat that weighs just 22 ounces.

RANS donated a pair of V2 Formulas to Sam Reed and Doug Bentz. They rode the bikes across the country from Ticonderoga, NY to San Diego, CA to raise awareness and generate contributions to the Make-A-Wish Foundation. Sam and Doug and their well-worn V2's were at Interbike. These fun-loving guys had a great ride. You can read more about it at [www.thelongbikeride.com](http://www.thelongbikeride.com).

Contact: [www.ransbikes.com](http://www.ransbikes.com).

## Sun Recumbents

Sun's 2005 line is huge and moving towards



*The RANS Arms Position Forward (A.P.E.) B-39 handlebar is now an option for the Force 5, Screamer, V-Rex and Rocket*



*RANS has updated the Flip It for 2005, with wear washers at the hinge and a bolt has replaced the QR for a cleaner, smoother operating Flip-it (all models except Screamer Sport)*



*The V2 Formula is sporting a new aluminum fork, with disc brake mounts, (the frame has always had rear disc mounts). The V2 Formula's price is now \$2,395.*

20 models! Here is a listing by design style:

The singles are (SX=hi-tension steel; CX=cromoly steel; AX=aluminum):

**EZ1** 20/16 CLWB: SX (\$525); DSX (SX with DualDrive) (\$825); AX (\$825).

**EZ Sport** 26/20 LWB: CX (\$925), AX (\$1,295).

**EZ Rider** 20/20 rear suspension LWB: SX (\$699), CX (\$999), AX \$1499.

The Sun SWB: **EZ Speedster** 26/20 SWB: SX (\$699), CX (\$999), AX (\$1,499).

The Sun tandems: EZ Tandem: CX (\$1,995), AX (\$2,695).

The Sun trikes: **EZ 3 Delta** OSS SX (\$725), AX (\$1,295), **USX** (delta USS) (\$825); and the new **EZ3 Tadpole** SX (\$1,095) and CX (\$1,495). We're guessing that an aluminum tadpole is coming.

Sun also sells a quad kit called the Quadribent that mates two EZ1s together side-by-side. The newest models for 2005 are the pair of tadpole trikes which will be available by the time you read this.

Angletech has a custom-spec'ed Sun USX model with wider range gearing and bar-con shifters. Harry at Wheel and Sprocket tells me that they have done a few EZ-3 AX trikes with a pair of 26" wheels on the back.

Contact: [www.sunbicycles.com](http://www.sunbicycles.com), [www.easyracers.com](http://www.easyracers.com).

## WizWheelz

The new carbon-fiber WizWheelz trike was displayed in the Wound Up carbon fiber booth at the show. Things will change for WizWheelz in early 2005 when the trikes will become available through recumbent dealers. "We are very excited about working with our new dealer network," says Randall Bertrand, sales manager for WizWheelz. "Many dealers are already in place, and new ones are signing up daily," he added.

The **TerraTrike 3.6** (\$1,899) is now in production. This latest TerraTrike is the result of eight years of improvement and refinement, according to WizWheelz. The updated steering geometry is described as "simply rock-solid." The 3.6 has what WizWheelz calls USH (ultra-stable handling) geometry, which gives it a more solid predictable feel at all speed levels. It also has a cast junction where the outriggers meet the main frame and for the first time full assembly comes standard! The 3.6 has Tiagra drivetrain, Hayes brakes, and weighs 36 pounds.

The new **Edge** (\$3,499) carbon fiber trike has also started shipping. The Edge has been in development for over a year. It has a full carbon fiber frame with machined aluminum intersections. It was co-designed by Advanced Composites, carbon fiber experts and the maker of Wound Up Forks. Aside from other consumer products Advanced Composites also makes torpedo tubes, missile-launching tubes, and rocket launching systems for the Defense



The new EZ Tadpoles are priced at \$1095 (hitensile steel; 49 pounds) and \$1495 (cromoly; 47 pounds)



The Hase Tagun LWB USS with full suspension © John Riley



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Department (. . . so watch out!). Each carbon fiber tube on The Edge is designed specifically for its individual application. Each intersection is machined from a single solid block of aluminum. The frame has a double-barrel main tube section that makes it rigid in order to resist twisting while cornering, yet it is lighter weight than a single tube frame. The Edge has a SRAM X.9 drivetrain, and Hayes disc brakes.

WizWheelz also has a full aluminum trike, the **TTR** (\$2,599) which weighs 30 pounds; and the **TT Tandem** (\$3,999), which weighs 60 pounds.

Contact: [www.wizwheelz.com](http://www.wizwheelz.com).

### Seen & Noted at the Show

**ATOC:** The friendly folks at ATOC had a booth displaying roof racks and hitch mounts for carrying recumbent bikes and tandems.

Contact: [www.atoc.com](http://www.atoc.com).

**Calfee:** Despite Fast Freddy's departure last year, Calfee is carrying on with the Stiletto LWB recumbent project. The 23-27 pound LWB OSS carbon fiber recumbent was on display. The Stiletto has a RANS Zephyr seat and linkage OSS bars and a carbon fiber front fairing. The bike sells for \$4,110 frameset, \$4,741 Ultegra and \$5,452 Dura Ace. There was absolutely zero buzz around the booth this year.

Contact: [www.calfeedesign.com](http://www.calfeedesign.com)

**Cannondale:** There were NO, as in ZERO, recumbents in the booth this year. Apparently Interbike real estate is priced at a premium. We were instructed to visit one of the computer touch screens to get info on the Bent I and Bent II models. Let me get this right: fly to Vegas to look at a computer screen for info? Nah, they're not serious. It seemed to me that their recumbent energies are waning. The Bent II, the full suspension model, sells for around \$2,000.

Contact: [www.cannondale.com](http://www.cannondale.com).

**Giant:** This large mainstream bike company showed the new "Spirit" electric assist version of the Revive (\$2,200). According to Giant, "The Spirit incorporates a silent, medium-power level, bottom bracket placed pedal-activated electric drive unit, with secondary throttle-only drive, and Lithium batteries. 15 mph." This is probably the best use for the Revive.

Giant also showed a 21-speed Dual Drive version, but we're not sure when it will be available.

Contact: [www.giant-bicycle.com](http://www.giant-bicycle.com).

**Scooterbike:** USED GmbH showed the Scooterbike line of recumbents. There is not currently a distributor in the US. Read our review in RCN 077 before you send off your hard earned euros.

Contact: [www.scooterbike.com](http://www.scooterbike.com).

**Rotor:** Howie Cohen and the friendly folks at Rotor Cranks were there. They had the latest copy of RCN proudly displayed in the booth. They really liked the RCN review. Apparently many of you are buying and enjoying their cranks.

Contact: [www.rotorcranksusa.com](http://www.rotorcranksusa.com).

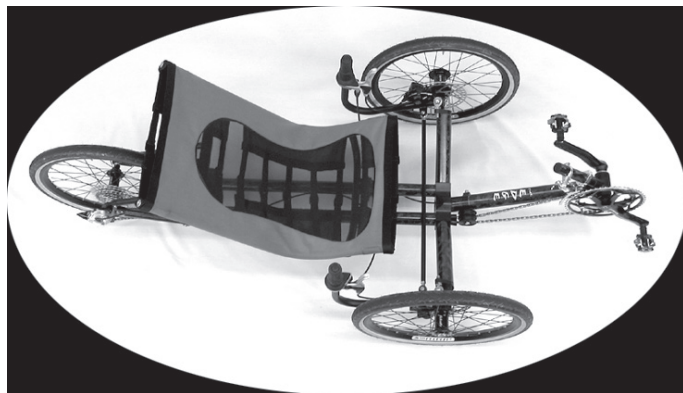
**Windwrap:** Windwrap fairings were at the Greenspeed, Catrike and Burley booths. Windwrap has developed a small fairing for tadpole trikes and high racers called the XT. This is a partial coverage fairing for recumbents with more vertical seat angles. It comes in two thicknesses. The thicker version, which is suitable for use with a body sock, can be ordered in clear or tinted (now available on most fairings) and weighs 2 pounds, 1 ounce.

The XT fairing and mount sells for \$191 (either thickness or tint), and fits on most tadpole trikes, highracers, and other SWB recumbents that have a derailleur post. Mueller is also developing a Catrike Speed body stocking and in 2005 will be working on fairings for road bikes. Carl Mueller (Mark's brother) has joined the company, and has been instrumental in developing equipment and new fairing designs. Mark Mueller is now working more in the office these days, dealing with customers. He also has more time to develop new products and refine existing ones.

Contact: [www.windwrap.com](http://www.windwrap.com).



*The WizWheelz TerraTrike 3.6 is available now*



*The WizWheelz Edge carbon-fiber trike is now available. Note the double mainframe tubes that under the seat (seat slide/adjusts). This trike is very cool. We currently have one for testing .*



*A Lightfoot Rangler with Angletech's GL81 Sram Dual Drive set up — Angletech*



*The Easy Racer Tour Easy and Gold Rush Replica remain excellent sellers*

## Other Recumbent News

(non-Interbike attendees)

**Actionbent:** This is the internet discount recumbent seller representing China-Mascot recumbents. They sell several SWB recumbents from \$595, including the new Roadrunner with over-seat steering (\$895) and the "Hi-Racer 1" (\$1,095). If you're considering one of these, read our review in RCN 084, hang out in the Actionbent group on Yahoo and watch eBay and the website for sale prices.

Contact: [www.actionbent.com](http://www.actionbent.com).

**Angletech** will be introducing a Colorado-built Titanium tadpole trike, the TiAngle, to complement the current line which includes the TriSpeeder (cromoly OSS) and the Quadraped (hand + foot crank) tadpoles. Angletech also offers the Altitude full suspension SWB and MC2, a fillet-brazed Angletech/Mark Colliton/Mark Nobilette custom SWB OSS recumbent.

According to Angletech, the TiAngle is a full titanium tadpole trike with three 20" wheels. The seat is an aluminum frame full mesh with adjustable recline angle. "The frame design has triangulation in the front which eliminates any pedal steer. The supple Ti ride is evident on imperfect surfaces. Where steel and aluminum transfer the road texture, the TiAngle absorbs it." Details include hollow steering tie rods, internally-routed cables, Ritchey WCS lifetime headset, single-lever operated dual Magura BIG front disc brakes, parking/drag rear brake, anodized grey aluminum fittings, cobalt satin anodized frame, etched graphics and an S&S coupler option. Two component packages will be GL81 with SRAM Dual Drive hub, and SHO with either Dual Drive or Shimano Capreo components.

Angletech's other specialties are custom paint jobs and custom high-end components, such as Rotor cranks, SRAM Dual Drive 81-speeds, Rohloff 14-speeds, custom and hand-built wheels. Custom work is available on Bacchetta SWBs and highracers, RANS LWBs and highracers, Haluzak, Easy Racers and custom tandems. Angletech also sells recumbents from Sun and Greenspeed, as well as special needs modifications.

Contact: [www.angletechcycles.com](http://www.angletechcycles.com).

**Barcroft:** News from Bill Cook: "We have the Virginia GT, the Dakota, and the Dakota S in single bikes for 2005. All are available with



*The Challenge Seiran*



*The new ICE "Q" (for Quick) is £1,599  
The new "T" is the touring model that we'll be reviewing very soon.*



*Crank-It's full suspension tadpole  
© John Riley*



*Above: The hand and foot powered Angletech Quadraped  
Below: The Angletech TiAngle*



a sliding boom (\$100 extra). The Oregon low racer has a sliding boom and a variety of seat possibilities. The Oregon is more customized than the others, so the price is about \$3,000.

The Columbia tandem has evolved into an extremely well-equipped tandem that is, in my view, the standard of the industry. It's super-comfortable and fast. It is also one of the more expensive, now that it has eight-inch disc brakes and a White Brothers pneumatic fork. Chris Burkhardt and I rode one on the Seagull Century and were able to cruise all day on a level surface at 19-20 mph. It has a sliding boom standard (that is also used to tension the timing chain). The Columbia lists at \$4,250. A version with four S&S couplers is \$5,250. Another road tandem is in design and may appear sometime late next year. It will be substantially lighter and, of course, more expensive. It also may never see production. The first prototype weighed 38.5 pounds with seats and pedals but is too limber."

We're very excited to be receiving a 2005 Barcroft Dakota test bike very soon.

Contact: [www.barcroftcycles.com](http://www.barcroftcycles.com).

**Bigha:** We haven't heard from Bigha since our RCN 080 article was published. We still have a few of these back issues (\$3 special price through March 2005). Bigha has raised the 2005 price on the deluxe model to a staggering \$4,100. An RCN reader sent us the new pricing info.

Contact: [www.bigha.com](http://www.bigha.com).

**Bike Friday:** The Bike Friday SatRDay (dual 349 mm 16" wheels) recumbent is temporarily unavailable while the company completes design work on a new and improved SatRDay with 20" wheels. The new model will be lighter and easier to fold and pack. The seat will be improved and lower to the ground for easier starting and stopping. This new model is slated for introduction in Spring 2005. The DoubleDay Recumbent tandem has been discontinued.

Contact: [www.bikefriday.com](http://www.bikefriday.com).

**Challenge:** The Dutch recumbent bike manufacturer Challenge has a full line of recumbents to suit a wide range of riding needs from laid-back touring to commuting to racers. The Serian sport touring highracer is new for 2005. According to the company, "When Challenge started out in the late eighties, we only made Highracers, only because at the time, there were no fast, small wheels available. In those days, recumbents were only used for racing. Over time our customers discovered that these bikes were also perfect for traveling. Our High-racers evolved into heavy duty touring bikes."

Challenge is also introducing an entirely new "SL-series" (SuperLight) models with weights as low as 22 pounds (\$3,000). Challengebikes are being imported and distributed by Eurdis European Distribution LLC in Michigan.

Contact: [www.eurdis.com](http://www.eurdis.com), [www.challengebikes.com](http://www.challengebikes.com).

**Crank-It:** The off-road folks at Crank-It did not exhibit at Interbike, but brought a top-secret prototype full suspension OSS folding tadpole trike. This unique trike comes as a 24/20/20 or 20/16/16 wheel combination. A Swanson Euro-style carbon-fiber seat was on the prototype. The trike has a 10-degree seat adjustment, FlexStem riser, 42" wheelbase and a 27-speed 3x9 drivetrain. All wheels quick release off the trike (a la Mountain Quad) and the rear swing arm has a unique one-sided wheel mount.

Contact: [www.crank-it.com](http://www.crank-it.com).

**Easy Racers:** No significant changes for 2005. The company is moving forward and offering the Tour Easy, Gold Rush, Fold Rush and TiRush models.

Contact: [www.easyracers.com](http://www.easyracers.com), [www.sunbicycles.com](http://www.sunbicycles.com).

**Hediger Cycles:** Jerome Hediger, the US rep for Greenspeed also has a line of recumbents that he sells directly, including the Trimuter 20" wheeled trike (\$2,885), the BigWheel 26"/20"/20" trike (\$2,875) and three variations of the HedTurner SWB USS (starting at \$2,000).

Contact: [www.trimuter.com](http://www.trimuter.com).

**ICE:** The makers of the Trice have unveiled two new lower-priced models for 2005, "The two new models are based on the Trice XL and Trice Explorer, but with one BIG difference, the price." The new ICE models are the ICE Q (for "quick"), based on the XL, and the ICE T (for "tour"), is based on the Explorer. Depending on current exchange rates, these models each sell for £1,599, plus shipping and duty.

The quick success of these new production models has brought a few more variations of the T and Q: The ICE S is based on the XXL and is an affordable performance trike. The ICE Q NT is based on the T, but has a 4 inch narrower track. The ICE L is a compact touring trike based on the Pixie, designed for riders around 5' tall. The ICE R, L, Q, S and T will feature a 9 speed rear cassette, Deore rear derailleur, Truvativ chainsets with choice of chainring sizes. Tires are Kenda Kwest 1.25" and 1.5" 100 psi.

These models come with angle-adjustable seats, reach-adjustable handlebars, two-piece frames for easy transport, a rear rack, rear fender, mirror and flag. Frames are lugged and fillet brazed in the UK by ICE using T45 and Columbus cromoly. ICE makes 18 models of beautiful tadpole trikes.

Contact: [www.ice.hpv.co.uk](http://www.ice.hpv.co.uk).

**Maxarya:** Maxarya's current model range includes the CLWB Ray-1 (\$1,145) and Ray-1X (\$1,585). Each is available with 20/16 or 20/20 wheel combos. Maxarya has been working on two new recumbents with 26" wheels. The first is an aluminum 26/20 SWB performance recumbent. There will be two options: the higher-end model with a Scandium frame



*The Challenge Hurricane*



*The front-wheel-drive Reynolds Z-Bone*



*Lightfoot's Greenway trike*



*The Canadian Maxarya Ray-1X*



*The 2005 RANS Rocket has an X-7 drivetrain and a Truvativ Elita crankset and sells for \$1174 — oh yes, and it's red.*

and 26"/20" paired-spoke wheels; and the base model with lower-quality components. The seat height in both models is about 22" and the bottom bracket height about is 27". The higher-end model can be ordered with disc brakes and with a rear suspension system. The target weight is 25 pounds.

Maxarya is also working on a lightweight 7005 aluminum LWB 26/20 recumbent with rear suspension. The seat height is about 22.5" and the bottom bracket height is about 20". It comes with the 24-speed SRAM group and a standard rear disc brake. The wheelbase will be 61-64" and the weight will be below 30 pounds. We currently have a Maxarya test bike in our road test bike stable.

Contact: [www.maxarya.com](http://www.maxarya.com).

**Reynolds Weld Labs:** George Reynolds has a new bike for 2005: the new Z-Bone ST, a front-wheel drive (FWD), rear suspension titanium lowracer. Cool! "The new bike has dual 20" 406 mm or 700c wheels, FWD, a rear air shock, and folds quickly to less than 36" x 25" x 12" (without removing wheels). The bike can be set up OSS or USS. The seat height is 14-15" and crank height is 25". The frameset sells for \$2,750 and includes a titanium frame, swing arm, alloy seat mount, carbon fiber seat, FWD fork and rear rack. Optional items include disc brakes, fenders, custom travel case/trailer.

Contact: [www.reynoldsweldlabs.com](http://www.reynoldsweldlabs.com).

**TerraCycles:** Pat Franz was out and about at the show, and brought his new "high efficiency long life power side idler." These custom idlers can have 6, 8 or 10 mm bearings, aluminum or titanium cogs, and are perfect for Burley, Bacchetta or your trike. Prices start at \$59. TerraCycles also produces the sweetest under-seat racks, the Easy Reacher, for Easy Racers, RANS, Burley and Volae bikes, with other models coming soon. They also produce the cool "Tailsok" kit to give your bike that streamlined look.

Contact: [www.terracycle.com](http://www.terracycle.com).

**VeloKraft:** This company is known for their carbon fiber lowracers. Rumor has it that they are coming out with a carbon fiber highracer. The USA importer is Bent Up Cycles in Van Nuys, CA.

Contact: [www.velokraft.com](http://www.velokraft.com), [www.bentupcycles.com](http://www.bentupcycles.com).

**Velomobile USA (VM USA):** This new company will be manufacturing the Flevo Alleweder (3x20" wheels) and Aligt (20" front + 26" rear wheels) kits as well as complete Velomobiles. The plan is to work mainly on the Alleweder since it is five pounds lighter than the Alligt and has much more baggage space. Most parts will be produced in Texas. The company is also working on a hybrid power-assist model.

Contact: [www.velomobileusa.com](http://www.velomobileusa.com).

**Volae:** Volae offers six models for 2005. The Team (\$2,950) has a carbon seat, X.0/

The Volae Club



Dura Ace components, 650c Velocity Ureil wheels and weighs 24 pounds; the **Club** (\$2,300) has a carbon fiber seat, Ultegra/X.9 components, Velocity Spartacus 650c wheels and weighs 26 pounds; The **Sport** (\$1,700) has a fiberglass seat, 650c wheels, X.7 components and weighs 27.5 pounds; The **Tour 26** (\$1,400) has dual 26" wheels, a mesh seat, Sram 4.0/5.0 components, and weighs 30 pounds; The **Century** (\$1,700) has a fiberglass seat, Shimano 105/X.9 components, 26"/20" wheels and weighs 28.5 pounds; the **Tour** (\$1,300) has a mesh seat, Sram 4.0/5.0 components, 26"/20" wheels and weighs 30 pounds.

The Club and the Team will have Waterford wet coat paint jobs with clear coat over the decals and logo. The Tour 26 will most likely have disc brakes and the ability to use up to 26" x 1.5" tires. The Team Rolf model has been discontinued. Rotor Cranks are now optional on all Volae models.

Watch for our upcoming Volae Club review.

Contact: [www.volaerecumbents.com](http://www.volaerecumbents.com).

We would like to extend a special thank you to the manufacturers who responded to our request for 2005 information. ♦

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SCOR Productions

Left: Randy Schlitter rides the new 2005 dual 26" wheeled RANS Fusion (starting at \$895) — RANS



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## RCN Calendar

February 12, 2005 Noon - 4PM

Michigan Human Powered Vehicle Association / Wolver Bent Recumbent Cyclists Annual Meeting / University of Michigan, Ann Arbor

Talks and displays on all types of human powered vehicles with an emphasis on recumbent bicycles. A "Buying your first recumbent" presentation will be given at 12:30PM. The MHPVA annual meeting will begin at 1 PM. Everyone is encouraged to bring their recumbents for "show and tell."  
[www.lmb.org/mhpva](http://www.lmb.org/mhpva)

February 26-27, 2005

Suncoast Recumbent Rally

Bacchetta is sponsoring a winter-time recumbent rally .  
Contact: [www.bacchettabikes.com/rally.htm](http://www.bacchettabikes.com/rally.htm)

August 12-14, 2005

12th Annual Midwest Recumbent Rally

For info & updates: [www.hostelshoppe.com/recumbent\\_rally.php](http://www.hostelshoppe.com/recumbent_rally.php)

October 8, 2005

2005 New England Velomobile/HPV Rally

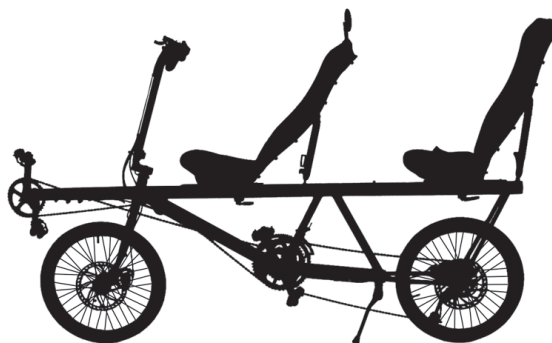
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# Everything You (may or may not) Want To Know About Recumbent Bicycle Components

By Bob Bryant

Bicycle components have changed a lot over the years. We're now in a world of disposable bicycle components, many of which are marketed like computer software and updates. That is the bad news. The good news is that fine bicycle components that will last for years, or even decades, are still available if you shop carefully. They might not come as part of the \$800 bargain 'bent you bought on the web, but they do exist.

Just so you don't think I'm a bike component snob, I'll let you know a little secret: I like good cheap bikes. The last really good cheap bike I had was made by Schwinn in Chicago in 1972, and at the moment, I don't own a single recumbent that sells for more than \$2,000. All of my views are based on personal experience, research and discussions with friends in the business. But I also remember what my dad always told me: "There is no such thing as a free lunch."

You may never have a problem with the components on your \$800 bargain 'bent, but the following information is in case you do, or in case you ever want to upgrade your bike or if you build a custom spec recumbent. I've gone right down the list of components that come on most recumbent bicycles. Enjoy!

## Cranksets

Choosing the right crankset and gearing will be one of the most important decisions in selecting or building a quality recumbent bicycle. The variables are the length of the crank arm, the size of the chain ring and the quality of the crankset.

## Crank arm length

For years we've relied on traditional cycling wisdom, or we've simply settled for the equipment chosen by the manufacturer. There is a far wider choice of components these days. One of the emerging, yet somewhat experimental trends in recumbent bicycles is the short crank arm.

Fans of short cranks say they are easier on your knees and legs, provide more force to the pedals, promote spinning, provide a decrease in frontal area, improve ergonomics and decrease weight. Some riders also mention a decrease in joint pain because the pedal circle is smaller and because lower gear ranges can be used. I haven't tried short cranks myself, but I plan to order a set soon.

In the upright bicycle world the general non-scientific crank sizing goes something like this:

shorter riders use 165 mm cranks, medium size riders use 170 mm cranks and taller riders use 175 mm cranks. I have found that these "standards" are often variable, and I've been fitted with 170 mm, 175 mm and even 180 mm cranks. I'm 6' tall, with a 44.5" x-seam and a 33.25" measured cycling inseam, and I've been riding with 175s for years. I've finally realized that they are just too long.

Recumbent manufacturers may be slow to change, but there are some forward thinking manufacturers and enthusiasts out there who are talking about this. Short crank advocate Mark Stonich writes, "155 mm cranks work better than 170s for a wide range of people. Most of my customers say they spin much faster with short cranks, without feeling like they are making an effort to do so." Mark went on to say, "Shorter cranks can be of particular benefit on 'bents with small drive wheels. The higher pedaling cadences they encourage can often eliminate the need for oversized chainrings or multispeed hubs."

Ian, Mick and Paul Sims of Greenspeed are also short crank advocates. In a recent Greenspeed newsletter, Ian wrote, "Paul took the 175 mm cranks off his personal GTR, and fitted 100 mm cranks. He found such an immediate improvement in both performance and the stress on his knees and legs, that he announced that there was no way he was ever going back to using normal size cranks." Ian noted further, "Paul did some testing on our Computrainer dynameter. He tried four different lengths — 175, 155, 125, and 100 mm. Over the four lengths, power output was virtually constant, with a slight reduction of maximum power for the 100 mm."

Mark Mueller of Windwrap Fairings has written, "I'm 5'11" and using 110 mm cranks on my Greenspeed SLR (my primary vehicle; 140 mm cranks are standard on this model) and my Volae highracer. My brother, Carl, is 5' 10.5" and runs a 143 mm crank. He says his legs and especially his knees are less fatigued with the short cranks."

Where to get short crank arms: Mark Stonich converts 155mm Dotek BMX cranks to touring triples, with 74 mm or 58 mm inner bolt circles. Complete cranksets start from \$95.95 on up depending on your choice of chainrings. Modified arms only are \$60 or he can shorten Shimano 105s for \$35. ([www.bikesmithdesign.com](http://www.bikesmithdesign.com))

Mark offers this gear selection advice: "If you are getting spun out with 170s, gear the

same with 155s. Otherwise dropping 4 or 6 teeth on each ring seems to work well. Most people are going from 30-42-52 to 26-36-46 or 24-34-44. Faster riders are using 28-38-48." Mark also offers bicycle related design and metalworking services. Such as design and prototyping of many of Calhoun Cycle's "Evolution" products.

Greenspeed does crank arm shortening. Visit [www.greenspeed.com.au](http://www.greenspeed.com.au) for info.

HP Velotechnik offers relatively inexpensive Tracer 155 mm 30/42/52 cranks on their bikes. These use a square taper BB and have a black finish (Zach Kaplan).

Peter White Cycles offers 155 mm TA Carmina triple cranks. This buffed alloy crank has a black interchangeable spider and auto extractor bolts. It comes in many sizes from 155 mm - 185 mm. This crank can be fitted with 20-24 tooth inside rings, 30-40 middle rings and 42-50 outside rings and sells for \$275 ([www.peterwhitecycles.com](http://www.peterwhitecycles.com)).

While the Hostel Shoppe has yet to advocate this new trend, it does offer short cranks for shorter riders in 150 mm and 158 mm lengths, 30/42/52, for an ISIS BB for \$125. ([www.hostelshoppe.com](http://www.hostelshoppe.com)).

## Chaining Sizes

Many recumbents come with off-the-shelf "road triple" cranksets with relatively high gears (30/42/52). Many riders will want to widen their gearing to provide lower lows, and perhaps a lower middle chain ring as well.

To find gears that you need, you need a point of reference. Once you are in your regular riding shape, climb some hills and determine the gear that works best for you by counting the number of teeth on the front chain ring and the rear cog. If you don't have a low enough gear, you need a smaller inside chain ring or a cassette with a larger inside cog. The best way to accomplish this is to replace your cassette with a wide range 11-34 and add a 24-tooth inside chain ring to your crankset. (If you need more information, read my gearing rant in RCN 079.)

If you are shifting into your granny low gear too early on a hill, consider a middle chain ring with fewer teeth to lower your mid-range gearing. This is a highly personal selection process that depends on your fitness level, your home terrain, the cargo/weight you carry and the hills or mountains you ride over.

To find a chainring to fit your crankset, our advice is to contact your local recumbent spe-

cialist. As Zach Kaplan told me, "Any bike shop can get chain rings, whether they want to is another matter."

For an online visual selection, the Hostel Shoppe carries Vuelta chain rings to fit the following sizes:

74 mm (inside chain ring on a road triple): 24-32 tooth, even sizes.

130 mm (inside or outside chain ring on road triple): 38-62 tooth, even sizes, plus 53, and 57 tooth.

110 mm (inside and outside chain ring on touring or old-style MTB crankset): 34-60 tooth, even sizes, plus 39 and 53.

Other options to widen your gear range include the Schlumpf Mountain Drive or Speed 2-speed bottom brackets or a SRAM Dual Drive (3 speed internal hub + cassette).

## Quality of Crankset

If you buy into the new recumbent short crank theory, most of the following is beside the point, but this is how most recumbents are equipped, so we'll take a look:

**Shimano Road Triple:** These are high-quality cranksets designed for racing-style bikes. The 105 is the enthusiast level, the Ultegra is advanced and the Dura Ace is pro level. 105 and above use proprietary BBs.

**Shimano Mountain Bike:** For those who prefer a very low gearing range (for hauling cargo or riding in a very hilly area), consider the high-end Shimano mountain bike cranksets such as the Deore LX or XT 22/32/44. Recently I had a Shimano Deore crank that had an out-of-true large chain ring that ticked the front derailleur cage (very annoying), so buy a good one and check it for trueness.

**Truvativ:** Truvativ was just purchased by Sram. These cranksets are attractive and can be an excellent value. They use common ISIS style BBs. The Touro triple is the enthusiast model, the Elita is the advanced and the Rouleur is the pro level model. The Truvativ cranks offer especially excellent value in the entry level to mid-range, and you won't be beholden to Shimano's proprietary BB designs. Beware of cheap ISIS BBs.

**FSA:** Our Bacchetta Corsa came outfitted with a beautiful FSA Carbon Pro crankset and our experience was short, but good.

**Campagnolo:** This fine maker of Italian bicycle components offers six high end road triple cranksets. The smallest crank arms available are 170 mm, and the largest is 175 mm. Three models include 172.5 mm. The cranks are 30/40/50, 30/42/52 or 30/42/53.

Entry level recumbents are often equipped with "no-name" or private label cranksets, though sometimes we find them on \$2,000 bikes as well. The primary reason why these cranks are used is to cut costs. Sometimes there is a reason why such a crank is spec'ed. These reasons could be: a custom chain ring selection, custom shorter crank length or even a

custom chain guard or guide to keep the chain from falling off.

Two of my favorite cranks are from Sugino and TA Specialties. The Sugino cranks are popular among fixed-gear, single-speed mountain bike and retro touring bike riders due to their lower gearing and flexibility in chain ring selection.

Rivendell ([www.rivendellbicycles.com](http://www.rivendellbicycles.com)) sells the Sugino XD2 in a 24/36/46 in 165 mm, 170 mm and 175 mm lengths. Rivendell also sells chain rings to fit in sizes 24-30 teeth (inside); 34-38 teeth (middle) and 42-50 teeth (outside) (even sizes).

Other cool cranks that you might be able to find include SunTour Superbe Pro (cold-forged from Angletech), Rotor Crank system and Schlumpf (two-speed bottom bracket).

## Bottom Bracket (BB)

Choosing a BB must be done in conjunction with choosing a crankset. There are several BB types: square taper (retro style), ISIS (Truvativ and FSA cranks) and Shimano proprietary systems for 105, Ultegra and Dura Ace.

Recently I had trouble with a low-end ISIS bottom bracket that kept coming loose. The bottom bracket is not a place to be cheap. If yours is coming loose or problematic, replace it immediately.

Shimano uses a square taper for their lower-end cranks and proprietary spined Hollowtech systems for the higher-end cranks. A retro-style square taper from Phil Wood is probably the most reliable bottom bracket made today. I'm told the square taper has more bearing surface, and so it lasts longer.

A Shimano cartridge-sealed BB can last 15,000 miles but is not serviceable. Phil Wood is the gold standard offering rebuildable cartridge-sealed bearing bottom brackets. Our best advice is to carefully choose your crankset, but keep in mind what type of BB it requires — and buy a high quality BB. Most people will need professional advice in choosing the correct spindle width for their bicycle, crank and BB.

## Derailleurs

Shimano is the mainstay of bicycle derailleurs. Enthusiasts should opt for Tiagra or 105 up front and Deore, Deore LX, 105, XT or XTR in back. This is pretty much the same derailleur recommendation that I would have made a decade ago. If you want a time-proven and durable drivetrain, match up a Shimano cassette, derailleur and some bar-con shifters. This also could have been written a decade ago.

Sram seems to update its drivetrain components more than most, and some may even label them as disposable. The 2:1 shifting makes for about the quickest shifting available to cyclists. Sram systems don't seem to require adjustment as frequently and many mechan-

ics I know like them better than Shimano. Here is a list of the currently available Sram derailleurs:

**Sram X.7** is the least an enthusiast should opt for. While known as a decent entry level derailleur, I've had them fall apart in my hands and I was generally not impressed. Just as this article was about to go to press, I took delivery of another X.7 equipped bike. The derailleur position set screw and plastic threads had popped out and was on the bottom of the shipping box. The alloy body 2005 model corrected this problem, but that didn't hold the pivot bolt and washer in this brand new derailleur (c-clip fell out in shipping as well).

**Sram X.9** From what I hear, the new and improved X.9 version is better than previous 9.0 models.

**Sram X.0** has a forged aluminum body and offers improved strength and performance.

Campagnolo builds mostly high end 20/30-speed (10-speed cassette) road racing components. Campy parts are designed to be rebuilt, but finding the parts is another matter. Campy is a much smaller component maker. Those wanting Campy will have to buy a frameset and build up their bike themselves or with the help of a knowledgeable dealer. For 2005 Campagnolo will offer flat bar shifters in the Mirage, Centaur and Chorus lines. You'll need to find a good dealer to put together your Campy 30-speed recumbent.

## Shifters

**Sram:** These twist-grip shifters shift quickly and are undoubtedly the most popular shifters for recumbent use. The downside is that they aren't as durable, they are louder (noisy plastic clicks) and when they fail, you lose your ability to shift. We've had two lower line Sram shifters, one front and one rear, fail this year with no advance notice whatsoever. In my opinion, the ESP 3.0, 5.0 and perhaps even the MRX are suspect, and weren't designed for a bike getting serious use. The Sram Attack and Rocket models should be the minimum requirement. Frankly, if ultimate durability was the primary concern, I just wouldn't use twist-grip shifters.

Sram has two-button trigger (Rapid Fire) shifters, but we have not used them. I've had Rapid Fire shifters on my last three mountain bikes and have never had a problem with them, but I have always had a concern that they were overly complex.

**Shimano:** Rapid-Fire two-button shifters work well and have been around for years. While complex, I had a set for years and couldn't break them. Shimano bar-end shifters are about the best shifters in the world. They are tough and even have a friction mode. Paul Components makes an adapter called the "Thumbie" which convert your bar-ends to retro style thumbshifters.

## Cassettes

Shimano and Sram are the industry standards and offer high-quality shifting performance. I've had no recent experience with Campagnolo, which is not used on any recumbents I know of. Other cassette brands may work, but are usually used as a cost-cutting measure. If you're having indexed shifting problems, the first place to look is the brand of cassette and chain on your bike.

## Mid-Drives

These are midship-mounted gear changers that require a two-chain drive system. There are a few different types:

**Rear derailleur:** This is a two-chain drive system that can offer up to 72 speeds. It adds complexity and may take extra time to get accustomed to. Examples: Rotator and Lightfoot.

**Front derailleur:** This type shifts a midship-mounted crankset (with no crank arms) or a custom cassette with several cogs. The crankset type is more common. Example: Cannondale.

For a casual cyclist these systems are really unnecessary. If you have a need for very wide range gearing (for instance, on a fully-faired bike or cargo hauler), or if you are just a gear-head, there is really nothing wrong with them. Just be sure to stock some replacement parts. When Trek quit making its mid-drive recumbent, owners were stuck with no parts for this proprietary system.

## Other Drivetrains

**Shlumpf:** This is a two-speed gear inside the bottom bracket that is shifted by a heel button (where the BB dust cap should be) and doubles the number of gears on your bike. There are three varieties: the Mountain Drive is a reduction gear that reduces gears by a factor of 2.5; the Speed Drive is an over-drive that multiplies gears by a factor of 1.65; and the High Speed Drive that multiplies gears by a factor of 2.5. These are ideal for small drive-wheel bikes or for those who want a simple drivetrain but a wide range of gears.

**Sram Dual Drive:** This is a three-speed internal hub mated to a seven-, eight- or nine-speed cassette offering 21, 24 or 27 gears at the rear wheel. The #1 gear is a 27% reduction, #2 is a 1:1 lockup, and #3 is a 136% over-drive. These work especially well with small drive wheels or where a very wide gear range is necessary. On recumbents the Dual Drive is often used in conjunction with a front crankset, producing an 81-speed bike (27 gears + 3 Dual Drive ranges)

**Rohloff Speedhub:** This is an expensive jewel-like planetary hub transmission that offers 14 gears that cover the same range as a 27-speed derailleur drivetrain, and provides a 526% increase between the lowest and highest gear. The downside is the weight, noise in certain gears and especially the cost (an addi-

tional \$1,000 on top of the price of your bike).

**Shimano Nexus:** The Nexus is an incredible seven- or eight-speed internal hub gear and shifter. The Nexus 8 has a range similar to a mythical 12-38 cassette, and provides a wider range than any cassette made. I have a city bike with a Nexus and so far it has been indestructible. The best part about the Nexus 8 is the low cost. These hubs come outfitted on upright city bikes in the \$700-\$1,700 range. It's a shame that this transmission isn't available on any production recumbents. Angletech, Rotator and Lightfoot have done custom Nexus bikes in the past. Nexus also makes disc and roller brake front hubs, and integral roller brake 8-speed rear hubs.

## Brakes

Four basic types of brakes are found on most recumbent bicycles;

**1. Dual Pivot road brakes:** These modern brakes look like the side-pull brakes of the past, but with the two pivot points for extra leverage, they work like a center-pull. These simple and elegant stoppers are very lightweight and are found mostly on recumbent road bikes (highracers). These should be THE choice for a serious recumbent road bike.

**2. V-Brakes:** These are powerful rim brakes from the mountain bike world. They are much like cantilevers but are more powerful and easier to adjust.

**3. Disc brakes:** These are like the powerful discs found on cars and motorcycles. Bicycle disc brakes come in two distinct types: mechanical, which is cable actuated, and hydraulic, which have mineral oil or hydraulic fluid in the lines.

**4. Drum brakes:** These are like automobile and motorcycle brakes with small brake pads inside a small aluminum drum, and are manufactured by Sturmey Archer/Sunrace.

**Dual Pivot Road Brakes:** These are often cast aside because riders feel they need the super braking power of V-brakes or discs. Dual pivots are lightweight, are easy to mount and adjust, and changing pads is simple. They are enjoying a resurgence in popularity with the highracer crowd. One secret to stronger braking with dual pivots is to have good cable housing and some cable stops (and naked cable). Talk to your recumbent specialist about other ways to increase braking power and to find optimum brake system. Shimano dual pivot brakes are the best quality and easiest to work on. Certainly stopping power isn't as good as a V-brake or disc brake, but if it's good enough for the Tour de France riders, it's certainly good enough for recumbent riders. Tektro and private label brakes are fine, but certainly not as good as Shimano. Fitting good pads can increase braking power.

**V-Brakes:** These high-power brakes are sourced from the mountain bike world. Levered arms pull brake pads against the rim side

wall for braking power. We've had good luck with Shimano, but Avids seem to be the number one choice. Sram and Tektro are acceptable, but the pads are marginal. Talk to your dealer about getting some really good brake pads. V-brakes in heavy service can wear out pads in as little as 3 months. (I recently did this on my commuter.)

**Mechanical Disc:** These are the simplest of the disc brakes, but some are better than others. I've had several test bikes over the past two years with discs. I've had excellent luck with some brands, although I was surprised at how frequently I needed to adjust the pads (which can be as easy as turning a dial). Discs are more of a hassle than dual pivot brakes, and can present different problems than V-brakes. Three of our recent test bikes arrived with slightly warped disc rotors, and inserting the rear wheel can also be more difficult with disc brakes. Discs have a mechanical power ratio designed for big wheels (mainly 26" MTB size). This can make them feel overly strong or lacking sensitivity when used on small wheels. Disc brakes are also louder than V- or side-pull brakes; they make a car-like metallic noise when applied; they make fender and rack installations difficult; and they add about one pound over V-brakes. Disc brake power is wonderful, but not always necessary. There certainly is a place for these brakes.

Several entry level bikes come outfitted with Promax discs. These stop fine, and I could get them adjusted as needed. They have a very limited adjustment range. Upgrading them could cost \$100 or more per brake, so carefully consider your options. I've had no trouble with Shimano discs. They work fine and stop well. We did have some adjustment woes with some Tektro discs recently where we couldn't adjust out some minor brake drag. The Avids offer more adjustability and are considered by many to be the best mechanical disc. However, one manufacturer recently told me "*Avids are a less than average brake and the only thing they have going for them is adjustability. This is why mechanics love them.*" I put 600 miles on a set of Avids and it seemed like I was adjusting them too often (every 100 miles), but I still prefer them over any other brand.

**Hydraulic Disc:** These are definitely more powerful than mechanical discs, but rely on enclosed hydraulic systems with hydraulic fluid or mineral oil in the lines. One benefit is that on trikes, you can have both front brakes apply even pressure with one brake handle. Some dual piston models designed for downhill mountain biking are very strong.

I don't use these for one simple reason: I don't know how to work on them and nobody around here does either. If a line is pulled and you lose system pressure (which I've seen happen on a tour), you're basically stuck. If you want this type of brake, learn how to set up, adjust and maintain it yourself and carry the

parts necessary to do a roadside repair. These are superior stoppers if you learn how to maintain them, or have a local shop that does.

**Drums:** I must admit to being a bit skeptical about whether or not there is still a need for drum brakes on recumbent tricycles. Our new ICE “T” trike arrived and I got to try them for the first time in several years. They are oh-so-smooth, quiet, and simple and have a velvety smooth brake feel. In contrast, discs have an abrasive metallic sound and feel. Drums don’t have as much braking power as discs, but for the majority of riders they will be perfectly adequate. Also, maintenance and adjustment on drums are super easy and the pads last a long time.

## Chains

Many bikes come with fairly low end KMC chains. It is more affordable than other brands. The KMC chain links (Quick Links) must be replaced every time you remove the chain and are not always easy to find (so keep spares). I wouldn’t go out of my way to replace a new KMC chain until it was worn out or I was heading out on a major tour. When it comes time to replace it, I would opt for a Sram (formerly Sachs) chain, which I consider to be the best bicycle chain available. Sram generally shifts better, lasts longer, and is more trouble-free. I recently had the opportunity to fit Shimano chains to a recumbent, and what a painful experience it was. They use break-off push pins to splice the links. I ended up using four pins in one chain, broke a chain tool and was still concerned about the chain’s strength. Stick with Sram and your chain problems should be kept to a minimum.

## Suspension Forks

The best recumbent suspension is one that is already integrated into the bike design — such as those available from HP Velotechnik (Spirit) and Cannondale. These are well thought-out systems with the suspension inside the fork, and are the best I’ve tested.

Aftermarket forks are also available from Meks, Ballistic and White Brothers. The Meks Carbon fork (AC model about \$369) is my favorite. It is durable and high quality. The Ballistic 600 fork is a more affordable design that has been around for years. The White Brothers fork is the fanciest and most high tech of the forks. The RC-8 costs \$645. Many manufacturers and riders love these forks. Unfortunately, my experience with White forks was not good. Somehow our fork got through the quality control at both White Brothers and the recumbent builder and one fork leg wouldn’t hold air. The White fork has not one, but two air cartridges (one in each side of the fork) that need air from a special high pressure pump.

**Carbon Fiber Forks** (highracers only): Whatever lightweight carbon fiber 650c fork your bike came with, you can bet that there is

probably a lighter and more expensive one available. This is for gram-counting roadies only. The Bacchetta Yahoo group or [www.roadbikereview.com](http://www.roadbikereview.com) (or similar) will have the best line into the latest-greatest, lightest and best forks.

**Rear Suspension notes:** A cushy ride can be wonderful and will spoil you. Suspension is best for urban commuters, small-wheeled bikes, tourers and those who ride on rough roads. Rider/load combinations over 200 pounds should look into the availability of optional springs. Suspension can complicate fender and rack mounting, adds weight to the bike, is more expensive, and requires more maintenance. Fatter tires run at a lower pressure will give you some suspension. An example of this is the new Schwalbe Big Apple tire that comes in many sizes.

Keep in mind that larger diameter wheels generally ride smoother than smaller wheels. Steel frames generally have smoother rides than aluminum, and titanium will have the smoothest ride (some think titanium is too flexible). The best recumbent suspension designs have low pivot points for the rear swing arm. Consider your body weight and if your cargo weight will also be supported by suspension. “Pogo,” or pedal-actuated suspension movement (a.k.a. bouncing) is a big no-no and the sign of a poorly-designed suspension system.

## Headsets

One interesting aspect of recumbency is that not all manufacturers are using threadless steerer tubes yet, even on some high-end bikes. Many companies have unique threadless clamping systems. Some systems are really good, and others are just okay. You’ll know by how difficult installation and adjustments are.

As far as headsets go, the differences are the quality of the bearing, cartridge-sealed vs. caged bearing, ease of adjustment, and quality of materials. A headset can cost from a few bucks to over \$100. I really like cartridge-sealed bearing headsets. Two excellent examples are the Chris King and Ritchey WCS. The Ritchey WCS lifetime headset has precision machined aluminum cups, angular cartridge sealed bearings and is more affordable than a Chris King. Angletech provides these on several models. The King headset also has a huge KING logo and sells for about \$114. We found the WCS on the Internet for \$70.

Watch out for no-name brand mediocre headsets. Recumbents can put more pressure on a headset than a road bike, so this isn’t a place to cheap out. This isn’t something to run out and replace right away, but if you build up from a frameset, get a good one.

## Pedals

Most bicycle enthusiasts these days use “clipless” pedals. This means that your pedals

have a snow ski-type binding and your shoes have a cleat that snaps into the binding. Finding the system that works best for you can be a time-consuming and expensive task. The most popular brand of pedals is the Shimano SPD (Shimano Pedaling Dynamics). SPD pedals have become the industry standard primarily because they are easy to use and are relatively affordable. Some enthusiasts favor BeBops ([www.bebop.com](http://www.bebop.com)) because they have lots of float, and others prefer Crank It Egg Beaters ([www.crankbrothers.com](http://www.crankbrothers.com)) which have easy entry/exit (four possible entry positions compared with two with BeBops or SPDs). I’ve had at least one report of reluctant engage and release in touring conditions with BeBops. I like Shimano SPD because they aren’t fad-driven; they’ve been basically the same since the time I got my first pair over a decade ago.

Some riders experience pain from using clipless pedals (from having your feet in the same position). Harry Wozniak of Wheel & Sprocket likened the pain to standing on a ladder for an extended time. The problem is that clipless systems were designed for upright bicycles. Recumbents clipless systems need to have their cleats mounted further back on the shoe. Sometimes there isn’t enough room on the clipless cleat mounting tracks to mount far enough toward the middle of the shoe. Some riders modify their shoes with a Dremel tool, others just ride with incorrect positioning, and others stop using their clipless pedals in favor of basic platform pedals.

I use platform pedals and Shimano cycling shoes for most of my riding. They work especially well for commuting and on recumbents with low to medium (seat height) crank positions. The higher the crank, the more you may need a foot retention device.

Harry Wozniak recently sent me some fancy “VP” aluminum BMX-type pedals to try out. These have 10 pins on each side (to hold your foot on the pedal). You can ride in any type of shoe because the pedal base is so large.

Three basic types of platform pedals are available at most bike shops:

1. BMX-aluminum platforms (with pins) from \$20 to over \$100.
2. BMX “Bear Trap” or “Jaws” ([www.Nashbar.com](http://www.Nashbar.com)), from \$20. (Cheap Bear Traps are my personal favorites.)
3. MKS retro-style touring pedals ([www.rivendellbicycles.com](http://www.rivendellbicycles.com)), from \$20.

You can ride with or without toe clips and straps. (Rivendell has nice retro-style clips and straps.) The teeth or pins hold just about any shoe to the pedal (in most situations); however, these work best with bikes with low to moderate bottom bracket heights. One last option is the Power Grip strap. This is a diagonal strap that crosses the platform pedal.

You slip your foot in at an angle, straighten it, and the strap holds you in. Bike Nashbar also sells Power Grip brand pedals with straps.

## Shoes.

Angletech sells SIDI shoes which are very high quality and come in wide sizes. My new bike shoes are basic Shimano SH-M021G that cost just over \$50. I like them a lot and will buy another pair (one for clipless and one for platforms; and one for riding when the other pair is wet). They are relatively flat-soled and have laces instead of Velcro straps. In the past, I used Specialized MTB shoes, but they have a more contoured shape that is less walkable and I prefer my new Shimano shoes.

## Wheels

Here are the common recumbent wheel sizes:

**16" 305 mm:** These shorter and wider 16" size is found on recreational CLWB models.

**16" 349 mm:** These are found on micro, folding and performance trikes.

**20" 406 mm:** This is the BMX (bicycle motocross) standard which has now become a recumbent standard. This is the most popular and durable size of recumbent tire.

**20" 451 mm:** This is a taller, skinnier and rarer BMX size with fewer available tire options.

**26" 559 mm:** This is mountain bike standard, and far the most popular wheel and tire size.

**650c (571 mm):** This is a slightly smaller road racing wheel size used primarily on highracers.

**700c (622 mm):** This is the upright bicycle road and touring standard. Tires can be found from so skinny you wouldn't want to ride on them up to wide city and touring sizes.

## Hubs

The best hubs for recumbent use will be upper-end Shimano such as 105 or Ultegra, or a precision cartridge sealed bearing hub such as a Phil Wood. Hubs have been cheapened over the years. We have a 2004 model bike here with Shimano Deore hubs. The hub had to be rebuilt after 300 miles (a cone and a few bearings went bad). I asked our mechanic why this happened so quickly and he just said, "that's what you get with entry level parts." This bike had a mostly easy life being ridden around town by my 15 year old daughter Amy.

Like cranksets, headsets, bottom brackets and wheels (parts that rotate), you don't want to skimp on your hubs. There are many no-name brand hubs spec'ed on recumbents. They may be fine, but you could end up with a problematic one such as our Deore above.

## Tires

Consider using slightly wider tires than you would normally use on an upright bike. Riders

under about 180 pounds can ride tires smaller than 28 mm wide or less. If you are over 215 pounds, at least a 1.5" tire is suggested. The reason is that you cannot unweight your wheels on bumps as you can on a diamond-frame bicycle. Wider tires are more comfortable, less skittish to ride, and have fewer flats. Also be sure to use a tire width that is a good match for your body weight, for the cargo you carry and for the type of terrain you ride on. I don't want to hear about any of you 200+ pounders riding on 1" wide racing tires. Excellent recumbent tires can be found from Schwalbe, Primo, Continental, Kenda and others.

You'll note our softer approach to this topic. In the past, folks like me and Zach Kaplan argued that recumbents needed much wider tires. I ride on rough roads here at the end of the known world, and I can really send a shock up my spine on some stiff-riding performance-oriented bikes and trikes. On my city bike I started riding with 1.75" 65 psi tires. They are comfortable and (so far) less prone to flats. This bike is plenty fast as well.

We're not alone in this view. Our friends at Schwalbe discuss it in their 2005 catalog: "A study conducted by Cologne Sports University showed that a full suspension bicycle is 33% more comfortable to ride than a conventional bicycle. With [Schwalbe] Big Apple tires fitted to a conventional bicycle, the spine suffered around 25% less jarring ... compared to a standard 700c x 35c tire." The article goes on to discuss rolling resistance: "Using the same air pressure, wide tires roll approximately 10 watts lower. With a comfortable air pressure of 30 psi the [Schwalbe] Big Apple has approximately the same rolling friction as a standard tire at 60 psi." Big Apples come in 406 mm 20", and 559 mm 26" sizes. Besides being really nice folks, Schwalbe makes some of the best recumbent tires on the planet. We also like their tubes with all-metal valves.

## Wheel Rant

**Machine-Built Wheels:** Most recumbent bicycles come with machine-built wheels. Wheel quality varies depending on where these wheels are built, who builds them and how much extra service the builder pays for (resulting in varying degrees of trueness). This is becoming more of a problem. This season I broke three spokes on three different bike wheels. All were black spokes from machine-built wheels from Taiwan. In all three cases the wheels had been carefully tensioned and trued at set-up. In two of the cases the wheels were deemed problematic and needed to be rebuilt after a few hundred miles. Wheel-building machines were created for making large production runs of identical wheels very cheaply. Inside this mega-machine, the wheel is laced, tensioned and trued — all in a matter of minutes. One report I read called this, "a

very brutal process." Many of these wheels are just crap and at the very least the wheels are disposable. I think there is a good argument for just throwing out a problematic wheel and starting over with all new parts.

**Hand-Built Wheels:** This is an option that you don't hear enough about. To create a hand-built wheel, a skilled wheel builder collects the necessary high-quality parts. The spokes are then laced and evenly tensioned by hand, and then the truing process begins until the wheel is perfectly round. There are custom wheel builders in larger towns. There are a few on the Internet as well. Often they will offer a time or mileage guarantee on their wheels. Really good bike shops will allow you to upgrade from machine-built to hand-built wheels at the time of purchase. If you are a big or strong rider and really depend on your bike, you should seriously consider this option.

**Paired-spoke Wheels:** We've heard some good things (from qualified sources close to RCN) about paired-spoke wheels, particularly the Rolf and Bontrager brands. We've had good luck with others during our tests. However, we didn't put enough miles on any of them to know for sure about long term durability. Most of these wheels have 20 or 24 spokes and they cannot be repaired as easily, nor are they as durable as a regular-spoked wheel.

**Spokes in general:** Most bikes have three different sizes of spokes, one for the front wheel, one for the rear wheel drive side, and one for the non-drive side. We recommend that you buy a few extra spokes for each size on your bike or trike. Finding spokes, especially for smaller wheels will be difficult — and even more so if they are black. I needed a 20" black spoke earlier in the year and had to have it cut by my local shop. Even a 26" black spoke was difficult to find.

Well there you have it: my personal views on recumbent bicycle component options. My final thought for you is to become educated yourself. Surf the web, read some books and hang out in bike shops to learn more about bike stuff. Enjoy your education and form your own opinions based on your body, bikes and how and where you ride.

## Durability

Durability is the number one issue for me when I select bicycle components for real world use. I use my bicycles and RCN test bikes as daily transportation. I ride my 12 mile round trip commute to the post office twice daily — rain or shine. If you have received mail from RCN, the odds are good that it was delivered to the post office by bike.

For those of you who are under 160 pounds and ride on Saturdays down the bike trail or around the block — buy whatever you want. If you are heavy, carry a load, or commute at all — cheap parts will come back to haunt you.

If you tour with cheap parts on your bike, expect trouble. What it comes down to is that you either pay at the front door (buy a more expensive bike) or you pay at the back door (component upgrades, replacements and corrections).

It all comes down to your use. Casual recreational use puts little stress on systems. Start riding in all weather, up hills, down hills, with a cargo load and all of the sudden you are a serious rider requiring capable equipment. Bicycling at the recumbent level is not a cheap sport. However, I can buy a lot of bike equip-

ment for the \$7,000-\$10,000 per year I save by not owning a car.

Here are some other good web resources:

- [www.bikelist.org](http://www.bikelist.org) (Formerly Bridgestone Owners Bunch, or iBOB list, retro biked/ components)
- [www.mtbr.com](http://www.mtbr.com): MTB bike and parts forums
- [www.roadbike-review.com](http://www.roadbike-review.com): Road bikes and parts forums.

- [www.bikeforums.net](http://www.bikeforums.net).
- [www.sheldonbrown.com](http://www.sheldonbrown.com).
- [www.bentrideronline.com](http://www.bentrideronline.com). ♦

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 17" 32-369,  
 18" 28-355,  
 20" 28-406 folding, 28-451,  
 26" 28-559, 23-571,  
 28" 23-622, 25-622, 28-622,

**MARATHON PLUS:**  
 SmartGuard  
 16" 50-305,  
 20" 50-406, 60-406,  
 24" 50-507, 47-507,  
 26" 50-559, 60-559,  
 28" 50-622, 60-622,

**MARATHON SLICK:**  
 20" 35-406,  
 26" 35-559, 47-559,  
 28" 30-622, 37-622,

**BIG APPLE:**  
 16" 50-305,  
 20" 50-406, 60-406,  
 24" 50-507, 47-507,  
 26" 50-559, 60-559,  
 28" 50-622, 60-622,

**MARATHON:**  
 16" 40-305, 47-305, 37-349,  
 18" 40-355,  
 20" 40-406, 47-406,  
 24" 40-507, 47-507,  
 26" 40-559, 47-559, 50-559,  
 37-590,  
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*The author in his Alligt velomobile*

## **Living With A Velomobile**

**By David M. Eggleston**  
**dmeengr@nwol.net**

**O**n our month-long bike tour in England and the Netherlands in the summer of 2002 we had a chance to attend the Cycle Vision/European HPV Championships in Lelystad, Holland. We watched a three-hour time trial (no drafting allowed) in which the winning rider rode a Quest velomobile (VM) at an average speed of 35.66 mph. This was in spite of the 15-18 mph headwind on the backstretch of the 1.75-mi. oval track. Not bad for a street-legal, fully enclosed pedal car weighing in the neighborhood of 70 lb. Aerodynamics do matter.

I was working on a grant proposal to overcome the health disaster of overweight and obese people in the US and was looking for something to encourage people to ride bikes for regular transportation. A fast, all-weather pedal car might just be the key to overcoming the excuses people come up with for being utterly dependent on cars for all their travel.

I had a chance to ride a VM for a few yards. It glided nearly effortlessly but the seat did not fit and I could barely see out. I spent February 2003 in the Netherlands visiting six of the eight European velomobile manufacturers and learning about these machines.

By April 2003 I had shipped home two Alleweder (AW) velomobiles: a used Flevobike AW that had traded in on a newer Quest, and a new Alligt AW that was custom-built for me at the factory.

Alleweder means "all weather" in Dutch.



*A 1934 Mochet original recumbent*

It's quite literally a pedal car, a cross between a bicycle and an automobile. The current-era velomobiles are fully enclosed recumbent trikes, and were conceived and developed in the Netherlands and Denmark from 1984 to 1990. But they weren't the originals. Charles Mochet built Velocars in the 1930's with steering wheels, seating for two people and even a rumble seat, just like the old roadsters. Swedes built similar pedal cars in the 1940's. Charles Mochet is also regarded as the father of the recumbent bike. Francois Fauré was winning bike races on one of Mochet's racing models, the Velorizonta, in 1933 (see [www.velorizonta.com](http://www.velorizonta.com)). There are other precedents in HPV's, especially Al Voight's Vector series, which won so many races in the early 1980's.

There was a contest in the Netherlands for a "365 days a year" bicycle, one that could be

ridden all year in almost all weather conditions. The Flevo Alleweder (FAW) won the contest. Allert Jacobs rode approximately 40 km in an hour with a full load of baggage, which helped this FAW VM win. See the historical review by Ymte Sijbrandij at [www.VelomobileUSA.com](http://www.VelomobileUSA.com).

### **What is it like to live with a Velomobile?**

Well, it's different and fun. You can go out for a ride in almost any weather without discomfort. You can ride in traffic in very high winds. You can ride in the rain. You just have to put on your cockpit cover. If you zip your cockpit cover closed the interior will remain dry even when parked. No more riding on wet saddles. No need for fenders, as all three wheels are already covered, as on a car. No splashing on you when you go through puddles. On the aluminum Alleweders the chain is covered except right at the rear derailleur, so the chain goes a lot longer without needing cleaning than on an upright bike. The drive train is unaffected even when sitting out it the rain. A number of the high-priced VMs have the drive train completely enclosed so rain doesn't affect them at all.

You can get overheated inside your VM in below-freezing weather if you wear too much clothing.

Your toes won't get frostbitten. Winter training is fun.

Supermarket trips can be made easily in a velomobile with its ample cargo capacity.

You don't need panniers.

You can ride in ordinary clothing without having the wind whip up inside your shorts as it does when I ride an ordinary recumbent wearing loose shorts.

You don't need to balance any more. You can go around corners fast, but the rear wheel may skid a bit.

You can ride close to a curb at 15 or 20 mph. You don't need wobble room like you do on a standard bike or recumbent. So the fact that VMs are a bit wider than standard bikes does not make them more difficult to ride in traffic. You are incredibly comfortable in a cushy, inclined seat. You could conceivably park the VM and take a nap.

You can park it almost anywhere.

You can lock it with a U- or cable lock if you feel a threat of theft. When you think about it, there are so few of them around (Midland, TX has two, and they are both mine) that they are very conspicuous. It would be very risky to steal one and try to sell it to somebody. Hardly anybody would be dumb enough to ride a stolen one. Being heavy and ungainly to lift, they are hard to steal. It usually takes two people to lift one into a pickup truck. It's a bit hard to learn how to release the parking brake. With all these problems for thieves, I usually don't lock my VMs when going into a store to

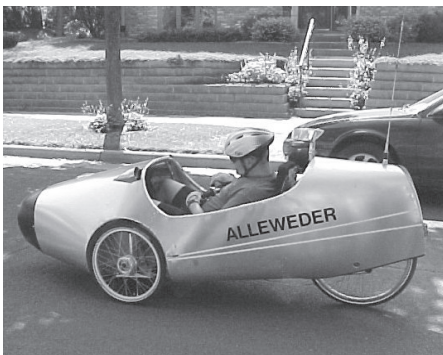


shop. Vandalism during a joy ride is possible in some places. If you are really worried about theft, you can install an auto anti-theft system such as the one made by Cobra. Then if somebody manages to make off with your VM you can track their location by satellite.

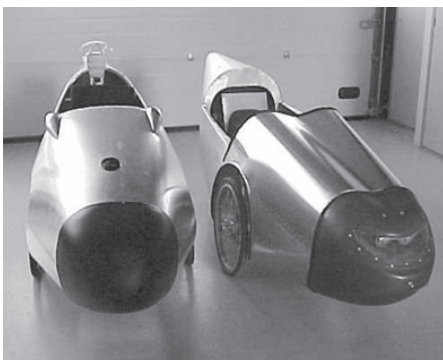
Speeds are an interesting matter. VMs roll incredibly easily. In fact, you have to lock the parking brake to prevent them from rolling off on their own! It's also good to lock them when mounting or dismounting, although you'll eventually learn to do it without the parking brake. On level ground VMs can be pretty fast. The Dutch point out that on level ground a bike racer in a Quest (a super-streamlined VM) could easily outdistance a Tour de France peloton, even one led by U.S. Postal with Lance Armstrong. So strong riders in a VM don't need a peloton to go fast. Even not-so-strong riders can go faster than strong riders. This is neat for old guys like me. The reason this is possible is that the human body on a diamond-frame bike has very high aerodynamic drag. Sprinters can go very fast for a few seconds, but a bike racer in a Quest can go for hours. The more docile VMs such as the Alleweders are not quite as fast, but are still respectable. You really notice it when you put pedal to metal. At speeds above 15 mph the low drag of the AW streamlined shape makes it easier to go fast.

The NVHPV (the Dutch HPV group, at [www.ligfiets.net](http://www.ligfiets.net)) did a comparative speed test on an indoor test track. They found the Quest to be 25% faster than an Alleweder with about 250 watts input. The Mango was 8% slower than the Quest, and the Versatile was only 3% faster than the Alleweder. So some VM's have much better aerodynamics than others, but you get what you pay for, and Alleweders are much less expensive. For example, the price of the Versatile has gone up to 7800 Euros (\$10,374 at an exchange rate of \$1.33 as of 12-1-04). Also the aerodynamic drag of a VM can be reduced by clever additions or deletions, smooth cockpit covers, wheel covers, etc.

Being large, VMs are more obvious in traffic than standard bikes, and auto and truck driv-



The author and his Alleweder (3x20" wheels)



Alleweder and Alligt



A 1930's Mochet VM (see [www.mochet.org](http://www.mochet.org))

ers seem to treat them with more respect.

The AW's steering is sensitive but very smooth and stable. The first time you go down a big hill is exciting until you realize that you have very good control. If a hill is long enough

and steep enough you can easily reach 60 mph, which is exciting indeed. This tells you how low the drag is. Allert Jacobs of [Velomobiel.nl](http://Velomobiel.nl) rigged up a three-foot drag parachute for his Quest as a safety device for going down long mountain passes. The parachute converts a very low-drag VM into a high-drag one almost instantly. It could save your bacon on a long, winding mountain descent if your brakes over-heat.

Riding an upright bike against strong headwinds is really discouraging, but on a VM it's much easier and you can go faster. Riding a VM in strong crosswinds is no problem at all, and crosswinds don't slow you down much either. In fact, crosswinds can actually speed you up. A heavy baggage load makes an AW even more stable in high winds.

A VM provides pretty good protection from falls. You have to tip it over before sliding on the pavement will have any effect on your body. For any ordinary riding you can forget about road rash. Many Dutch VM riders don't even bother with helmets. Allert Jacobs, who was hit by a farmer's tractor and rolled over, wears a helmet all the time, and so do I.

After riding a VM you realize that standard bicycles are pretty unstable at low speeds. Even at higher speeds a rock or tree limb, uneven pavement, or trash on the road can throw you out of control. Touching a wheel in a peloton can result in a nasty crash. It's hard to see how this could happen in a VM. A VM body provides a certain amount of protection in any kind of a crash, be it with another vehicle or not. If you have a good neck rest on your VM, you are much better protected in a rear-ender crash in a VM than on a standard bike. You cannot vault over the handlebars if you apply the front brake too hard on a VM. Endos from braking are basically not possible.

Since the front wheels on a tadpole (or the rear wheels on a Delta) use one-sided axles, fixing a flat is very simple. Many tadpole VMs have single-sided rear axles also, so that any tire or tube can be quickly and easily replaced. With very sturdy tires I have yet to have a flat tire in more than a year of riding. This is great



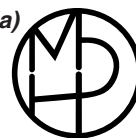
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for reliable transportation, and similar to having very good tires on an automobile.

The weight of a VM is a disadvantage. You can really feel any uphill sections of road, and you will slow down and learn to spin more. But the amount you slow down depends upon the change in the total weight of the vehicle plus rider from your usual steed. The heavier you and your usual bike are, the less the difference. (By the way, when you are inside a VM people can't really tell whether you are heavy or not.) If your VM has low gears, you can go up any hill, even fully loaded for a tour, without problems. My 72-speed VM has a gear inch range of 15-133 inches. You can spin at 2 mph up a steep hill (without worrying about falling over), or at 40 mph on a downhill grade.

VMs are very good for self-contained tours. The Dutch VM guys and gals do tours quite often. You can carry your food, clothes, and camping gear easily in a VM. No panniers needed. Do a Google search of Olliebollentocht to see more of the end-of-year tour in the Netherlands. Imagine a string of 57 VM's on the road. It would be an impressive sight.

Except for the heel holes in the front, the floor of AW's (and almost all other VMs) is closed. If your cell phone, keys, wallet, or camera fall out of your pockets, they won't go anywhere, and you won't have to worry about them getting lost somewhere on the road.

On an ordinary bike, you have to lean it against something to park it. Not with VMs. They already have a parking brake. Even in pretty strong winds, a parked VM will stay just where you parked it. It will not fall over.

VMs are very good for customizing. Fancy lighting systems and LEDs, turn signals, hydraulic brakes, Rohloff hubs, GPS, the sky is the limit. (The only other limit is how much extra weight you are willing to carry.)

But the main reason to drive a VM is fun. (I say drive instead of ride,

since you really do drive a VM.) Car and truck drivers give me a thumbs up. Kids go wild with "cool bike" and "nice bike." You will attract a lot of attention riding a VM, especially whenever you park it. People will tend to gather around. So VMs are good for outgoing persons, or persons wanting to become outgoing. Or for scouting members of the opposite sex.

VM's make great transportation vehicles, are excellent for training, and are still useful for all sorts of other bike rides.

So go ahead and try a VM the next chance you get. Until they are more available in the US you may need to visit a VM shop in Europe. But we at VelomobileUSA will be working to change that, and you can keep up with our progress at [www.VelomobileUSA.com](http://www.VelomobileUSA.com).

### Other VM's

The Quest and Mango are products of Velomobiel.nl in Dronten, Netherlands. The company consists of Ymte Sijbrandij, Allert Jacobs, and Theo van Anandel. These three guys are true recumbent racers and very knowledgeable velomobile designers and entrepreneurs. Anyone wanting a Quest or Mango can easily order one from Velomobiel.nl, but you'll have to wait in line for six months or so for a Quest. Perhaps the best way to ship VMs to the U.S. is by air freight. While it may cost from \$800 to \$1,000, the chances of shipping damage are reduced, you get it quickly, and it can be sent to any major airport near you.

The Versatile is a product of Flevobike Technology in Dronten, Netherlands. Flevobike is the famous recumbent design firm that invented the Flevobike and started producing the Flevo Alleweder in 1990. It is a family firm run by Johan Vrieling and his sons. The Versatile is a very refined VM but the price has been raised to Euro \$7800 (\$10,000+ USD). Not many Americans are likely to spend this amount of money for a VM.

Flevobike's current production rate of 1 per month is so slow that it may take nearly forever to get one. Orders for these can be placed directly by contacting Flevobike. It would make no sense for us to import Versatiles for the reasons noted above. And the investment to produce them in the U.S.A. would be astronomical.

Leitra VMs are built one at a time in Ballerup, Denmark. Most customers visit Leitra in person, have the VM fitted and then arrange shipping home by air (this is the most affordable way to ship them). Leitras have been built by VM pioneer Carl Georg Rasmussen since 1983. More than 270 Leitras have been built. For more information, see RCN 077 (Breakfast with Carl Georg: The Leitra Interview by Bruce Bruemmer; or <http://www.leitra.dk>). A fully-equipped Leitra sells for about Euro \$7000 (\$8900+ USD) plus shipping.

VelomobileUSA is determined to produce low cost velomobiles that will allow Americans to experience the velomobile phenomenon. The Alleweders are ideal entry level VMs. They are very durable, low-maintenance, practical vehicles and they are relatively inexpensive. ♦

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He is not pleased with the strength of horses nor in the legs of man, but the Lord delights in those who fear him and hope in his mercy — Psm 147: 10 & 11

# Volae

[www.VolaeRecumbents.com](http://www.VolaeRecumbents.com)

Your Only Excuse Is The Engine



Catrike dealer in Washington state at this time; how crazy is that?) had nothing but good things to say about Catrike.

Delta Trikes: The popularity of the Sun USX suspended delta trike caught many by surprise. This 3 x 20" under-seat steering trike sells for under \$1,000. There are other delta models, but this one seems to have caught many a buyer's eye. But be aware: this is truly a recreational trike and may not be tough enough for daily commuter use without some upgrades. Watch for our review coming soon.

More serious deltas from Hase and Lightfoot can be purchased for cargo carrying, sport riding, commuting or touring.

### Highracers

The enthusiast highracer buzz is still active, though perhaps cooling just a bit. The big selling points are light weight, roadie-style parts and excellent performance. Performance is really the name of the game here. The three big companies are Bacchetta, RANS and Volae. The RANS Force 5 is the best value with its trussed frame and choice of several seats; the Bacchetta is the specialist in this genre with the most highracer experience and models; and Volae is the direct seller with a very high-quality US-built line. The brands, models and designs all vary a bit, but you can't go wrong with any of these bikes. The downside is that the highracer riding position is a bit extreme, or high off the ground for some riders. Also, most models aren't exactly versatile bikes for commuting and touring.

A micro-trend for 2005 is the highracer concept in a touring or commuting variation. Both Bacchetta (Giro 26) and Volae (Tour 26) have models like this. The trussed RANS Force 5 frame seems perfect for a dual-big wheel tourer/commuter, so we expect to see one from them at some point.

### Commuter Recumbent

As gas prices have increased to over \$2 per gallon, and hybrid cars edge towards \$25,000, the cost of owning a motor vehicle has risen dramatically. As a result, the concept of affordable human powered transportation becomes more viable and a realistic option for many. Stop for a moment and figure out what that car is costing you: \$500 to even \$1,000 a month for an SUV is not uncommon.

As an urban rider who commutes 20+ miles per day, this is a trend I'm looking forward to, and I'm happy to try to push it along. When I'm not riding a recumbent, I ride a Breezer Uptown 8 city bike (\$850) (www.breezerbikes.com). It came with fenders, lights, hub dynamo, rear rack, kick-stand, chain-guard, a frame lock and the wonderful Shimano Nexus 8-speed internal hub gear (NO derailleurs!).

Breezer really started the "bikes as trans-

portation" trend. These bikes are tough, reasonably affordable and seriously useable. Others will follow. An RCN reader alerted me to the new REI Novara Fusion (www.rei.com), similar to the Uptown 8, with a retail price of \$699. I also noticed that Bianchi (www.bianchiusa.com) has the Nexus 8 Milano, as well as their Castro Valley 9-speed commuter. Trek has a Nexus 8 equipped L300 (www.trekbikes.com) with a fully enclosed chain for \$879.

I'd like to see a recumbent equivalent of this bike. To be highly visible in traffic, an ideal commuter recumbent would have to be a compact long wheelbase or short wheelbase. Only a few such recumbents exist at this time: the HP Velotechnik Spirit (\$2,000-\$3,000 with adequate options) and the \$4,100 Bigha. Sadly neither comes close to offering the affordability of the upright commuters. Other possibilities would be the Maxarya, Sun EZ Sport Ltd., RANS V-Rex, Barcroft Dakota, Bacchetta Giro, Giro26 and perhaps the new Bacchetta Café MWB coming soon.

A good city bike should have some cargo carrying capability, should be easily locked, be comfortable to ride, and should feature durable tires. The ability to mount the bike on the front rack of a city bus would be an added bonus, even though this feature would probably rule out most LWB recumbents. Our best hope is a good all-around SWB, or perhaps a MWB.

You can make your own commuter-style recumbent by adding fatter tires more durable, fenders, a rack (or seat bag) and lights. Rohloff hubs can be adapted to many recumbents. My problem with the Rohloff is that it adds \$1,000 to the retail price of any recumbent. I'm all for whatever works. This trend means that folks will actually be using their recumbents for transportation, and not just hauling them out in their SUVs to the bike trail or to charity rides. If you've got a good recumbent commuter story, please send us a letter and photo (see Letters section of this issue).

**Velomobiles:** A micro-trend that is worthy of mention is the European-style full-bodied velomobile trike. These are mostly tadpole trikes with full suspension and a fully enclosed body so that you can ride in the rain and cold.

I've seen the action pick up some steam this past year on the internet velomobile newsgroups (bentrideronline.com and ihpva.org). There are several enthusiastic Cab-Bike (www.cab-bike.com), Quest (www.velomobiel.nl) and Leitra (www.leitra.dk) owners stateside. As I'm writing this, RCN subscriber Harvey Aubuchon from the Bay Area is preparing to take delivery of the first Aerorider (www.aerorider.com) delivered to the US.

So far we only have one US manufacturer (Velomobile USA) selling Alleweder kits and complete velomobiles (see story this issue).

My first thought was that a do-it-yourself velomobile could be built using one of the

many tadpole trike platforms. I have only found a few people who had done this. Carl Mueller of Windwrap fairings built a very cool velomobile (www.windwrap.com/Carl.htm, click on "GIB"). This velomobile body was put together using fairing panels made by Windwrap along with lexan pieces. The frame is home-built. Carl says it is a prototype and a lighter, more improved version will be built.

David Lawson has experimented with bodies on his WizWheelz trike (http://members.impulse.net/~dms/trike.html). If any RCN readers buy velomobiles, please send us a letter and photo (by email or post) to share your experiences. ♦

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Letters continued from page 5

cages, a mount for my Garmin GPS. I have tried two seat bags; the Pyramid Pro messenger bag and a Radical Design shorty. I now have a rear rack and fenders — since I anticipate continuing to ride as much as possible through the winter season. I get lots of looks from people. The kids seem to love it — lots of “cool bike” comments.

Just got my latest issue of RCN; other than my Porsche related magazine, *Excellence*, it's the only other magazine I subscribe to.

Robert Vleugels ♦

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## Kent Peterson Update

Many of you will remember Kent Peterson's excellent RCN articles back in the late 1990s. Kent now rides fixed and single speed bikes and works as a bike wrench at Sammamish Valley Cycle in Redmond, Washington.

Kent has been doing epic mostly randonneur rides, including Paris-Best-Paris, for the past few years. He is active in the Seattle International Randonneurs club. This Summer Kent will be racing on the second annual Canada to Mexico Mountain Bike Race: The Great Divide Race, the second annual Canada to Mexico bicycle race ([www.greatdividerace.com](http://www.greatdividerace.com)).

The route for the race was developed by the folks at Adventure Cycling. They mapped out

a bicycle route that runs from the Canadian border to Mexico along the spine of the Rocky Mountains. This 2,470 mile route zigzags over the divide multiple times with a total of 200,000 feet of climbing (comparable to climbing Mount Everest more than six times).

The race starts from Port Roosevelt, Montana on June 17th 2005. Kent will be riding a Redline Monocog single speed mountain bike. You can find out more about the race, and buy a t-shirt to help sponsor Kents ride. Watch for enroute ride reports at the site in mid-June. [www.mile43.com/peterson/Divide/DivideRace.html](http://www.mile43.com/peterson/Divide/DivideRace.html). ♦

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## Recumbent Wanted

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## Recumbent Cyclist News

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ing the show I would stop by the booth to find Gardner sitting on one of the Sun bikes chatting it up with a customer, a dealer or a fan. (Like many of us, Gardner soon learned that recumbents make great resting spots for weary show-goers).

Gardner's last trip to the Interbike show was in 2003, and he was sorely missed this year. After the buzz and hype of the five-day event last October, and nearly 10 hours of traveling to get home to Port Townsend from Las Vegas (and I flew!), learned that our friend Gardner Martin had passed on. It was a very sad day for me, and for recumbency.

Gardner did well in the recumbent business, perhaps better than any other company so far. But his success never overshadowed his mission of "Growing Recumbents — Faster." Gardner was a special man, a man with a vision for recumbency. He also liked his cars (his Corvettes, his Studebaker hot rod, a Mazda RX8 and others) and especially his Citabria airplane. (It's no coincidence that the Easy Racers

factory is at the Watsonville airport.) Gardner had the kind of passion for his interests that you just can't learn. It was part of his being.

The recumbent world is much more fragmented than it has been in the past. There are many recumbent splinter groups throughout the world and on the Internet — and even in print. Whether you are a recumbent rider, racer, dealer, manufacturer, or media person, we can all do our part to further Gardner Martin's mission. His request was that we: "Grow Recumbents — Faster." We'll certainly do our part. ♦

**In Memory of our friend,  
Gardner Martin,  
to whom we dedicate this issue**

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## **Grow Recumbents — Faster A Goodbye to our friend Gardner Martin**

**By Bob Bryant**

Sandra Martin wrote that “Grow Recumbents — Faster” were Gardner Martin’s last words before he passed on last October. These words are now etched in my brain, perhaps forever. It all makes sense now. This was Gardner Martin’s life mission.

“Grow Recumbents — Faster” is a complex statement which Gardner Martin seemed to live by. Gardner Martin realized the “faster” part in his racing career. His focus on “growth” involved not only his own business, but the effort to get lots of people riding recumbent bicycles.

The Gold Rush streamlined racing bikes are perhaps the most famous racing human powered vehicles (HPVs) in the world, winning countless titles and speed records over the years. One of these race bikes is on exhibit in the Smithsonian. Gardner Martin and the Gold Rush team were once invited to the Tour de France for a promotional race, and a bike was built especially for the race, the Gold Rush Le Tour. The last racing event Gardner attended was the 2004 World Human Powered Speed Challenge last September in Battle Mountain, NV.

I met Gardner Martin over the phone back in 1987 — before the start of RCN — when I was a recumbent newbie, just some guy looking for a comfortable and fast bike. Nobody in Washington sold Easy Racer bikes at that

time, but I felt an instant attraction to the Easy Racers Tour Easy, and I was determined to own one. But I was nervous about buying a bicycle I had never seen or ridden through the mail from a company I knew nothing about. I’m sure many of you have had similar experiences.

Easy Racers and Gardner Martin set the bar in our industry very high. My experience was the best I could have hoped for, and it truly changed my life. I know many of you have had similar experiences with this company over the years. Despite his legendary status within our industry and in the HPV racing circuit, was always down to earth, approachable and friendly. He answered the phone regularly at Easy Racers and seemed to take joy in customer calls. Occasionally I’d get a call from Gardner on a Saturday morning. Gardner liked to go to work on Saturdays for customer appointments. His low-key attitude instilled confidence in thousands of his customers, each of whom knew how much he loved to sell recumbent bicycles.

To grow our industry, and his business, Gardner Martin sold thousands of Easy Racer plans and kits well into the 90s. He wanted recumbent bicycles to be within the reach of everyone. His production bikes were always a bit pricey. I paid \$1,000 for my 1987 model. These days the same bike is over \$2,000. When the homebuilder boom died down, Gardner

licensed his entry level designs to Sun Bicycles — perhaps the biggest coup (for both parties) in the history of the recumbent business. Most of the Sun models were designed by Gardner Martin, or at least the design phase was overseen by him. Like the Easy Racer bikes, the bicycles made by Sun were designed to be durable and user-friendly, but priced so that anyone could afford one.

All of my memories of Gardner are happy ones. When I started RCN in 1990, Gardner called me to chat about it. (I was too nervous to call him.) Even back in the days when RCN was just a little cut-and-paste fanzine, Gardner Martin was 100% supportive and never made me feel small or insignificant. Bryan Ball of ‘BentRider Online relayed similar experiences to me when we discussed Gardner’s passing.

When it came to test bikes and doing critical reviews of his bikes, he remained 100% supportive. Even as recently as last summer, when we encountered some minor glitches in a test bike order, he did everything in his power to accommodate us. When I complained about the Sun EZ-Rider CX being too heavy, he shipped an aluminum AX model within a few days. Gardner was involved in the RCN road tests of his bikes. For years we talked after most every RCN issue was published. He called, or submitted a written post-review comment after nearly every road test. That rarely happens with other road tests these days.

In the mid-90s my pal Ron Schmid and I spent two days in Freedom, CA, riding and hanging out with Gardner and the Easy Racers crew. Gardner even convinced me to go up in his Citabria acrobatic airplane. I got to sit in front and control the stick, an experience I’ll never forget. After a few drinks at the airport (post-flight!), he convinced me to get on the Gold Rush indoor trainer. The day was capped off with a wonderful Mexican meal with Gardner and Sandra at a local Watsonville, CA restaurant.

In the 1990s I attended several HPV racing events where the Gold Rush team was participating. It was exciting and fun to watch: European racers, Tim Brummer’s F40 squadron, Steve Delaire’s Rotator team and the Gold Rush Team with “Fast” Freddy Markham. These events, in Portland, OR in 1990 and in Yreka, CA in 1992 will never be duplicated.

Over the last few years my personal meetings with Gardner were brief but enjoyable, and usually took place at Interbike. Gardner didn’t care much for Las Vegas, but took his role as recumbent elder statesman seriously. There was always a buzz in the area where he was: whether it was the Sun/J&B recumbent booth, or the coffee shop/buffet at Harrah’s hotel. Wherever Gardner was became a meeting place to chat about all-things recumbent. Dur-

*Continued on page 30*

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