

# Recumbent Cyclist News

RCN 088 A Publication by and for Recumbent Enthusiasts Since 1990 May/June 2005



Daniel Bryant on the Catrike Pocket, see page 16



9-Ferries Tour, see page 24



RCN's Bob Bryant commuting on the 2005 WW TT 3.6

## The WizWheelz TT 3.6 A Smooth & Affordable Enthusiast Trike By Bob Bryant

*"The TerraTrike 3.6 is ideal for commuting or cross-country touring. It is the every-person's trike, a great all-rounder with a bombproof, time-tested proven design. The 3.6 is the result of eight years of improvement and refinement. The frame construction and steering geometry have been improved yet again and this version is simply rock-solid." — WizWheelz*

**TRIKE:** TerraTrike 3.6  
**BUILDER:** WizWheelz  
**ORIGIN:** Hastings, MI, USA  
**STYLE:** Tadpole USS  
**USE:** All-Arounder  
**PRICE:** \$1,899

### MODEL UPDATES: TT 3.6

The WizWheelz TT 3.6 is the newest update to the popular TerraTrike tadpole recumbent trike. We received one of the first batch of about 50 trikes built in December 2004. Here are the updates on this model:

- Cast lug (mainframe/cross-member)
- Sparkle red powder coat with clearcoat (over decals)
- Adjustable seat straps (instead of cord)
- Redesigned seat (bend in seat base edge)
- More stable steering and handling
- Cast hub mounts

The TerraTrike 3.6 is the latest version of the popular entry-level enthusiast trike from WizWheelz. The TT 3.6 has been significantly updated and is certainly the best version of the design so far. While not the lightest or the fastest entry level trike, the TT 3.6 is one of the most comfortable riding tadpole trikes you will find — and it is a great value to boot.

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Check out our updated website at:  
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# Recumbent Cyclist News

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

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## Contact

RCN, PO Box 2048, Port Townsend, WA 98368  
Tel. 360-379-5607  
E-mail: bob@recumbencyclistnews.com  
Web: www.recumbencyclistnews.com

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# Editorial License: The Trike Sub-Culture

by Bob Bryant, Publisher  
bob@recumbencyclistnews.com

There are several sub-culture in the world of recumbency. One rather quiet sub-culture is that of the recumbent tricyclist. These are unique riders who have opted for a third wheel on their supine machines.

Most recumbent tricyclists ride rather low tadpole trikes from the likes of WizWheelz, Catrike, Greenspeed, ICE and others. They are all great brands, each having their own unique *enthusiast* design features and loyal followings. I like them all for various reasons. I've just finished testing four trikes, and have three more on the way. I guess you could say I've become addicted and I am now part of the three wheeler sub-culture.

Last year, at age 44, I decided that needed to ramp up my riding to something I could live with on a daily basis, year-around. So I started riding 20-25 miles per day, six days a week. I incorporate rides to the post office, to have coffee with friends and to run errands, and I incorporate fitness rides into the mix. This got me into relatively good shape and I felt somewhat invincible. I then had an unexpected injury that kept me off the bike for a week and made cycling very uncomfortable for six weeks. (That's a story for another time; it has to do with ripping around town on a single-speed racer and an injury in my nether region).

As I was rehabilitating and thinking very fondly about riding recumbents, our WizWheelz Edge test trike arrived. The Edge was here for a few weeks, just long enough to get me hooked. Shortly after it left, a 2005 WizWheelz TerraTrike arrived here for testing. I've been riding it as my daily commuter for two months.

While there are many fine trikes available, the TT 3.6 really grabbed hold of me. This trike offers a very smooth ride (over our rough roads), a roomy cockpit, a large comfy seat (with adjustable recline) and moderate bottom bracket height. Trikes also offer great utility if set up right.

I have a WizWheelz TTR (aluminum) is on my radar; I've ordered a tricked-out Greenspeed GT-3 (with a Rohloff and 140mm cranks!); and I'm excited about experiencing a 29-pound Catrike Speed test trike for hot-rodding around town.

Riding a trike is a unique experience, and requires a somewhat different attitude than a two-wheeler. I am enjoying my rides more, I get a better workout on the same courses (trikes require more effort to propel, or so it seems to me), I relax, gear down and spin up the steepest hills in town (and enjoy it), I don't have to balance, or unclip at stops and I get more respect on the road from motorists. The trike also seems easier on my body. I'm enjoying this new-found passion that reminds me of the first time I rode a recumbent back in 1986.

I'm thinking that there are a lot of two-wheeled recumbenteurs out there who are, like me, just itching to get into their first trike. I think it is actually the hottest growth segment in enthusiast recumbency at this time. It's not about ultimate performance, and it just might be the friendliest recumbent fraternity around.

If you've been sitting on the fence watching the trikes go by, the time has never been better to get into triking. There have never been as many excellent entry-level trikes available to us. ♦



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# Recumbent News

**CATRIKE SPEED 2005:** Catrike has unveiled the newly-redesigned Speed model. It will be outfitted with SRAM X.9 components, a Truvativ Elita crankset, Avid disc brakes, Schwalbe Stelvio tires (20" 451mm rear & 16" 349mm fronts), a 33° seat angle, 6.5" seat height, FSA kingpin headsets, a fully heat treated aluminum frame and it weighs just #29. Prices start at \$2350. [www.catrike.com](http://www.catrike.com)

A newly redesigned Catrike Road is expected soon.

**T-BONE SAFETY NOTICE:** T-Bone owners need to inspect the welded joint at the end of the main frame and end cap before every ride. It is possible for a fatigue crack to start at the bottom of this joint, if undetected the crack could propagate and eventually lead to failure of the joint, and cause you to crash. If you can send me your frame, I will reinforce this joint with a gussett at no extra charge.

Many T-Bones have thousands of miles of trouble free service. My personal T-Bone has well over 10,000 miles. The last few batches of T-Bones made had gussetts reinforcing the end cap joint, but most T-Bones do not. Installing gussett takes about an hour. I will try to return frame within a day or so. With frame stripped down, fork, seat, boom removed, frame should fit in box: 60" L x 10" H x 8" W. For original owners I will cover return shipping

cost. George Reynolds Reynolds Weld Lab, 134 Rockingham Rd., Derry, NH 03038.

**ANGLETECH RECUMBENT SOCKS:** Kelvin Clark sent along some new Angletech Coolmax/lycra cycling socks. They are blue, gray and white and have the Angletech man logo, and "Bike Technology from a Different Angle" and "Not A Sausage" printed on them. [www.angletechcycles.com](http://www.angletechcycles.com)

**WIDE RANGE GEARING OPTIONS:** Zach Kaplan is offering custom Conrad OHO designed Shimano 9-speed Capreo cassettes. The Capreo, as seen on the Greenspeed GT3 trike, was designed specifically for use on small wheeled bikes. The stock Capreo 9-speed cassette is 9-26 tooth (vs. most other cassettes that have just an 11-tooth small cog. The custom OHO modified Capreo 9-speed 9-34 tooth cassette uses some cogs from another cassette that have been modified to give their Hyperglide ramps proper phasing with the Capreo cogs allowing smooth full power shifting on all the cogs. Zach sells the 9-26 Capreo cassette for \$75, the 9-34 Capreo cassette for \$140, the Capreo hub in 32 or 36-hole for \$60 and custom built Capreo rear wheels for \$180 and up.

**TERRACYCLES IDLERS — WIZWHEELS:** These are about the finest idlers known to recumbent-kind. TerraCycles just announced a WizWheelz idler kit. The

main part of the idler is CNC machined 6061-T6, and the chain bed is the same super-tough industrial urethane from the over/under idlers. The side plates are black Lexan, milled to match the anodized aluminum side plates of the Power Side Idlers. [www.terracycle.com](http://www.terracycle.com)

**6th ANNUAL PORTLAND HUMAN POWERED CHALLENGE** — May 28-29, 2005: This is a weekend of racing put on by Oregon Human Powered Vehicles (OHPV) and focuses on recumbent bicycles. The event will be held at Portland International Raceway on Memorial Day weekend in partnership with Electrathon America, with events Saturday and Sunday. There are many classes of racing.

More information on OHPV can be found at <http://www.ohpv.org>. Pictures from last year's race can be found at [http://www.ohpv.org/news/20040604\\_pir.htm](http://www.ohpv.org/news/20040604_pir.htm).

## RCN 087 WizWheelz Edge Correction

Regarding my comment on page 8 in the For/Against section: "Against, 3. Chain management/idler noise." This was a mistake and should not have made it into the review. I think the Edge chain management is excellent, the only minor issue is the chain angle from the idlers to the triple crank. So how did this get into RCN? We use dummy text to fill the spaces while we write the review. This "Against" was actually based on my findings during a WizWheelz experience back in 1998. My apologies to the folks at WizWheelz. ♦

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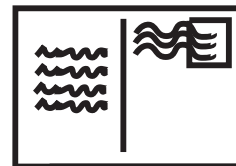
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# Letters To RCN

We want to hear what you have to say!

letters@recumbentcyclistnews.com



Peter Stull rides the new Linear

## LINEAR LIVES!

Linear Recumbents are Alive and Well right here in Western New York! The Bicycle Man purchased the assets of Linear in 2002 and moved production from Iowa to Alfred, NY.

For those who are not familiar with Linear, it is a LWB USS recumbent based on a unique "I" beam aluminum frame. We have updated the bike with a new level of engineering sophistication. Carefully analyzing the bike gave us a better understanding of its strengths and weaknesses. This was done using state-of-the-art computer design technology from Solidworks®, Cosmos® and Abaqus® — tools that were not available in 1983 when Linear was originally designed.

A stronger, stiffer, faster frame is one of the fruits of this effort. Customers have told us that their new Linears climb better than their old ones did. They also like the improved stopping power of the dual V-brakes and the added comfort of the new USS handlebar ends and Shimano bar-end shifters.

Of course the most fun part of our testing is the riding! I've been timing my favorite 45-mile course riding both old and new Linears. I find my arms are more comfy and I'm a bit faster on the new model. Last August, I rode the 2004 BentRider course around Keuka Lake, (my favorite scenic route) with 150 other recumbents. What a ball! I rode the Linear in the picture. As shown, with the fenders, rack, bag, kickstand and fairing it weighs just under 42 lbs. Linear recumbents have been touring the world for over 20 years. This venerable touring design is now even more ready for long distance tours.

We're very proud of the progress we have made and we're even more excited about the future of Linear. They are available directly from us. I encourage interested readers to check out Linear Recumbent Bicycles at [www.LinearRecumbent.com](http://www.LinearRecumbent.com). You can also e-mail us at [Peter@LinearRecumbent.com](mailto:Peter@LinearRecumbent.com) or call us at 607-587-8835. English riders can go to [www.LinearRecumbentUK.com](http://www.LinearRecumbentUK.com) or email to [Peter@LinearRecumbentUK.com](mailto:Peter@LinearRecumbentUK.com). We are currently looking for an English distributor.

Peter Stull  
Linear Recumbents

## ROTOR IGNORED?

I'm a relatively new subscriber and I really do enjoy keeping up to date on the recumbent world. In your RCN 086 issue I just received, I was all over your article on Components on page 18. I have a Bacchetta Strada and am seriously considering upgrading the crank. In a prior issue you had an entire article about the Rotor System crank, and I am planning to purchase one this spring. This article didn't even mention it. I was expecting a short blurb, or at least giving it an honorable mention.

Have you ridden with the rotor crank? Should I consider it as an option? Why didn't you mention it when covering the components in this the Rotor?

RCN Newbie

*Editor's Comments: I've not yet ridden with Rotor cranks on a recumbent. It seems like the majority of recumbent rider/Rotor users I've talked to or read about are satisfied. The Rotor website claims 95% of the 4,000 users are satisfied. For those who aren't there is a 30-day guarantee (see [www.rotorcranksusa.com](http://www.rotorcranksusa.com)). If there is a downside it is the cost and added weight. We have given Rotor much press recently in the letters, the news and a full review (RCN 084). The yearly season preview could be twice as big as it is. It is difficult to fit what we need to print into a regular issue. Rotor didn't get much play in the article, but we didn't forget them (see page 19, center column, above "Bottom Bracket").*

## GARDNER MARTIN

Thank you so much for the memorial article to mark Gardner's passing. You captured his spirit. Gardner always felt that the RCN was vital to the recumbent community and he admired the man who had the courage to commit to serving that community when it was still in its infancy. He appreciated the honesty of your bike reviews and the fact that they were never mean-spirited. He was always ready to respond to constructive criticism. I remember one letter to the editor a couple of years back where the writer was commending you on your honest reviews by stating that anyone who had the nerve to criticize a Gardner Martin product deserved respect. Gardner felt the same way.

Gardner supported RCN from the beginning. He admired and respected your passion as coming from the same type of core that fueled his own. Thanks again for your kind words.

Grow recumbent — faster  
Sandra Sims-Martin  
Easy Racers Inc.

## RECUMBENTS FOR KIDS

Is anybody making bents for small kids?

Douglas Collins

*Editor's Comments: There are semi-recumbent, or easy-bikes, from Giant and Evox (Canada), and some are even calling the new Schwinn Stingray a semi-recumbent. Giant had a full line of them at Interbike. As far as serious recumbents for kids go, they are difficult to find. The only design styles that really work for kids are a mini-LWB or a tadpole trike. This is mainly due to rider height. Catrike (Pocket), ICE (Pixie) and Greenspeed make trikes for shorter riders. Hase (Germany) Cambie Cycles (Canada) make recumbent-style trail-a-bikes. KMX Karts also has a kid's model.*

## GIRO MODS & BIG APPLES

Last year I wrote you about the Schwalbe Big Apple tire. Have you had a chance to try them? I now have 4,600 km. on mine in one and a half seasons of riding and I just love them. Soft for rough roads to hard for smooth pavement. It's almost like having a suspension on the Bacchetta Giro (which, by the way, is just a super touring bike the way I have it set up). I enjoyed the article on the Giro modifications (RCN 084). I am doing a few myself over the winter. I was able to fit an ESGE double-legged kickstand which folds both legs to the left side of the bike and which attaches to the bike frame using a Bacchetta seat clamp installed behind the seat clamp. I liked the idea of mounting the seat differently for easier removal. I plan on using this idea to mount my own seat and will add two quick releases to make the removal and installation of the seat even simpler. Thank you again for all you do for recumbent cycling.

Rene Joly  
Canada

## SHORT CRANKS

I just read your comments on the short crank arm lengths. I've also gone shorter; down to 165mm from the 175mm that came with the Tour Easy. Like the experiences you relate in your article, I've noticed a reduction in knee pain and sensation. I'm still getting used to the faster rpm's as I am really a masher. Kelvin at Angletech fitted out my Gold Rush with a 172.5mm Rotor crank. Now I wish it was at most a 170mm. Alas, these cranks are way too expensive to "just swap out." Even the regular cranksets cost more than \$80, which precludes experimenting. I am surprised to read that some are even using 100mm crank lengths. Isn't that too short?

In the summer I commute to work on my Tour Easy and in the winter I put studded tires on it to ride after the snow is packed down. Both my wife and I use the Tour Easy for self-supported touring. The Gold Rush is used for all the long distance rides. We have a brevet series up here, up to 600km, and I ride some of these. Last summer I rode the Fireweed 200. I ride as much as I can during the short summers. I've always liked your magazine; it keeps me in touch with the recumbent world. Thanks for your efforts in putting out RCN.

Dirk Greeley

*Editor's Comments: As you read this I'm riding on new 140mm cranks on a Greenspeed GT3. After many emails with Mick, Ian and Paul Sims, I decided to go down to 140. The gearing on the trike is also reduced by the 20% shorter crank arms. The theory makes perfect sense to me, I'll keep everyone posted via RCN on how it works.*



*High gas prices — I don't care!  
Fritz Keller sends this photo of himself  
and his EZ Sport.*

## INVENTORS WANTED

I'm interested in communicating with people trying to develop safer pedal-powered vehicles. I'm concerned about active safety, like the motorist who makes a sudden right turn without checking to see if a cyclist is nearby, or the motorist who drives along with half the car in the bike lane . . . etc. etc. I realize we can't drag around a bumper system like a motorist uses, but if we could come up with something that would allow bikes and riders to roll away from a collision with a motor vehicle at 20 mph we could save a lot of lives.

In polls, the main reason people say they don't cycle more is for fear of traffic. Anything that gets people out of cars and onto pedal-powered vehicles is a good thing in my book.

One idea I had was a three-wheeler with a perimeter bumper as a frame. Or a velomobile built with a sandwich construction fairing (composites inside and outside over a foam or honeycomb center). This would be strong, yet lightweight, so it would be like riding a full-body helmet.

Send your ideas to RCN c/o Charles Brown (PO Box 2048, Port Townsend, WA 98368) and RCN will forward them to me. I will send copies of everything back to those who respond to this request over the next 60 days.

Charles Brown

*Editor's Comments: I have thought about a perimeter frame velomobile as well, perhaps something made with flat replaceable coroplast panels. A fourth wheel would also give it more stability (Pippa Garner, Project HPUV, RCN 080, pg. 24). I'd love to see this be easy to build within the reach of the average homebuilder. Perhaps even utilizing a production trike frame as the basis.*

Letters continued on page 29

## Recumbent Cyclist News Back Issues For Sale

We have a limited number of each of these back issues for sale. The rate is \$5 each postpaid USA \$6; Canada \$7; Worldwide \$10; Buy 5, get one free.

- RCN 087: WizWheelz Edge, CG RDX, Volae Club, Homebuilt FWD, and Recumbent Safety
- RCN 086: 2005 Season Preview: What's New in Recumbents; Components and Gardner Martin.
- RCN 085: Crank It quad & HP Velo Grasshopper
- RCN 084: GS GT-3, Actionbent, Giro, Rotor crank
- RCN 083: HP Velo Street Machine & 'Bent GPS
- RCN 082: Bacchetta Corsa
- RCN 081: 2004 Season Preview
- RCN 080: Bacchetta Corsa; Sun EZ tandem.
- RCN 080: BiGHA; Cycle Genius CGX; RANS Screamer tandem; Windcheetah Kit.
- RCN 079: Easy Racer Tour Easy; RANS Stratus; RANS V2; Euro Seat SWB Installation.
- RCN 078: Catrike Speed; Hase Kettwiesel; Velomobiles.
- RCN 077: Greenspeed GTT; Bacchetta Aero 1000 Mile.
- RCN 076: ICE Trice trike; CG ALX20.
- RCN 075: HP Velo Spirit; Barcroft Columbia tandem; WizWheelz trike.
- RCN 073: Bacchetta Giro, Strada & Aero.
- RCN 072: Sun EZ Sport; Why We Sold Our Car.
- RCN 071: Penninger Trike; Burley Hepca; Burley Canto and Burley Nomad trailer.

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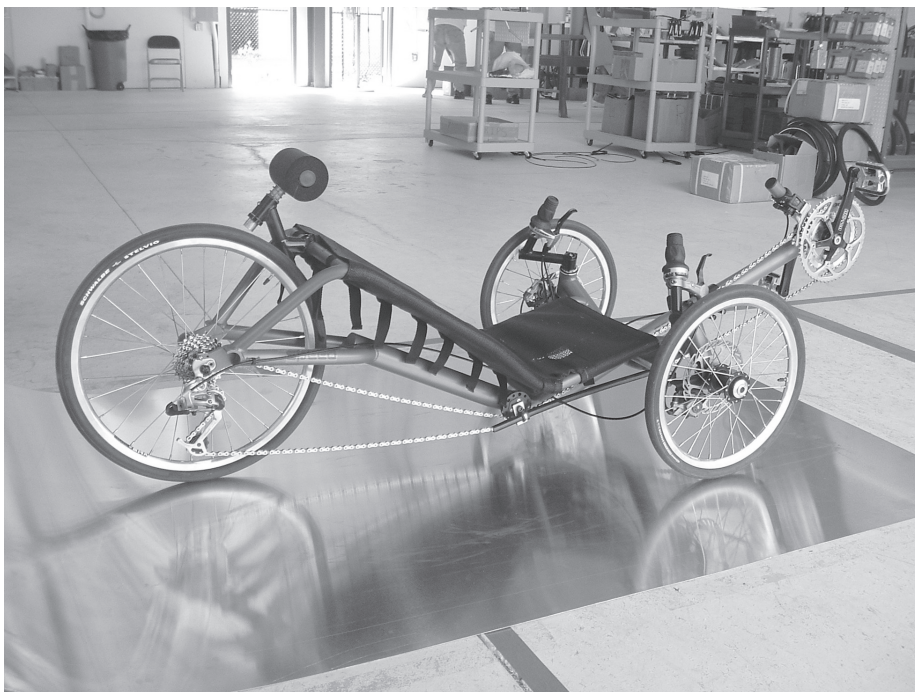
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## Send Letters to the Editor of RCN

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



The new 2005 Catrike Speed was unveiled in February. This is sure to be one of the hottest new trikes of the year. The price is \$2350 and it weighs just #29 lbs.

## How To Be A Recumbent Tricyclist

By Bob Bryant  
bob@recumbencyclistnews.com

### SELECTION ADVICE

Recumbent trikes have become the hottest new micro-trend in recumbency. New riders find them to be relaxing to ride and a great deal of fun — like a pedal-powered sports car. Some of the benefits include:

- No worries about balance
- No “clip in,” “clip out” or falling over at stops
- Lower gearing makes riding/climbing easier
- More comfort (full mesh seats on most models)
- A very unique ride

For the 2005 season, we have a host of newly updated models available from some excellent manufacturers. Here is a list of the most popular tadpole trikes available through dealers and priced under \$3,000:

### ENTRY LEVEL ENTHUSIAST

(Sorted by price)

#### Sun SX/CX (\$1,100/\$1,500)

These new Sun models are sure to be quite popular. They have mesh back, foam base seats, three 20” wheels, disc brakes and HiTen/

ChroMoly frames. The SX weighs 47 lbs. and the CX weighs 49 lbs. according to Sun.

#### Catrike Pocket (\$1,500)

This is the shortest, lightest and most affordable trike we’ve tested and is best for smaller riders and those wanting to do some flat track racing. It has an aluminum frame, three 16” wheels, disc brakes, direct steering and a fixed mesh seat. The Pocket weighs 26 lbs. according to Catrike.

#### WizWheelz TerraTrike (\$1,900)

This is one of the most popular trikes in North America. It has a ChroMoly steel frame, indirect linkage steering, adjustable recline mesh seat, three 20” wheels and disc brakes. With a medium boom, it weighs 37.5 lbs.

#### WizWheelz TTS (\$2,199)

This new model has the TTR frame and a component mix from the TT 3.6.

#### Catrike Road (\$2,350)

This newly-updated model is probably the most popular trike in North America. It has a fully heat-treated aluminum frame, kingpin headsets, direct steering, a fixed mesh seat, three 20” wheels and disc brakes. The Road weighs 30 lbs.

#### ICE T (est. \$2,400)

This is the budget version of the Trice Explorer with a ChroMoly steel frame, three 20” wheels, kingpin headsets, drum brakes and an adjustable recline mesh seat. The Ice T weighs 40.9 lbs.

#### Greenspeed GT-3/GT-5 (\$2,600)

This is the sporty folding frame Greenspeed model with a removable fixed recline (40°) mesh seat. These models have ChroMoly steel frame, drum brakes (GT-3) or hydraulic disc brakes (GT-5), indirect linkage steering, three 16” wheels and that elegant Greenspeed handling. The weight is 37.5 lbs.

### PERFORMANCE/RACING

#### Catrike Speed (est. \$2,350)

This is the hottest performance Catrike model. This trike was not shown until late February of 2005. This sleek racer has a fully heat-treated aluminum frame, kingpin headsets, direct steering, 349mm 16” front wheels, a 451mm rear wheel and disc brakes. The Speed weighs just 29 lbs. This is certainly the hottest performance trike value in the world today, and the latest in performance trike design.

#### ICE Q & Q NT (est. \$2,400)

The Q and Q NT (narrow track) are budget performance trikes with a ChroMoly steel frame, three 20” wheels, kingpin headsets, drum brakes, adjustable recline mesh seats and indirect linkage steering. They weigh 40.9 lbs.

#### ICE S (est. \$2,400)

This is the sportiest of the ICE budget series, with a narrow track, hard-shell seat, a ChroMoly steel frame, three 20” wheels, kingpin headsets, drum brakes and indirect linkage steering. It weighs 40.9 lbs.

#### WizWheelz TTR (\$2,599)

This model has an aluminum frame, double crank, disc brakes, indirect steering and an adjustable recline seat. The TTR weighs 31 lbs.

#### WizWheelz Edge AL (\$2,999)

This new model is an aluminum-framed version of the Edge model, has three 20” wheels, disc brakes, adjustable recline seat and direct steering. It weighs 32 lbs.

**Note:** ICE budget weights include a rack, rear fender, mirror and pedals.

### THE PLAYERS

(Alphabetical)

**Catrike:** This isn’t just a brand, it is a phenomenon. Catrike is the vision of Brazilian designer Paulo Camasmie. Paulo quickly figured out what design attributes riders want

most on their trikes, and Catrike offers them: lightweight aluminum frame, disc brakes and high performance. With Catrike's space-frame and aluminum frames and direct steering, the models weigh just 27-30 lbs., which is noticeably lighter than the competition. Catrike prices currently start at \$1,500, but the best selling model is the Road at \$2,350 (See this issue and watch for upcoming 2005 Road and Speed reviews). Contact: [www.catrike.com](http://www.catrike.com).

**Greenspeed** and the Sims family are the most respected names in the recumbent world. They design and engineer their trikes to be robust and to perform well. Their models are carefully segmented by what the trike will be used for. They specialize in high-end performance, touring and expedition trikes. (By expedition, we mean circumnavigating Australia.) Greenspeed has been a mainstay in the US market for years, and while they are located in Australia, doing business with them is like doing business with a company across town.

Most Greenspeed trikes are out of the price range for this article, but the two exceptions are the new folding models: the Greenspeed GT-3 and GT-5. These machines offer removable seats, folding frames exceptional handling and a sporty ride (see RCN 084). Contact: [www.greenspeed.com.au](http://www.greenspeed.com.au).

**ICE** (Inspired Cycle Engineering): This builder from the UK also makes some of the finest trikes in the world. ICE is also known for high-end performance, racing and touring designs, and there are 25 models to choose from! For 2005, ICE has just unveiled a budget line, including several 3x20" touring and sport trike models that sell for approximately \$2,400. These models are based on more expensive ICE models, but are built in batches and the designs are simplified (see RCN 077 & this issue).

**Sun:** Sun is the new kid on the block, with two new very affordable tadpole trikes just now hitting the market. Sun trikes are built in Taiwan and warehoused throughout the US, resulting in the best distribution of any recumbent builder. Sun mostly builds entry-level recumbents, and the new trikes are no exception. While they are mostly robust, they are heavy. Contact: [www.sunbicycles.com](http://www.sunbicycles.com).

**WizWheelz:** This company has been building recreational/touring/commuter trikes in Michigan for several years. They have a basic format, a Chromoly steel spine design (no rear triangulation), a bolt-on seat, 3x20" USS design and an affordable price. With their recent expansion, there are carbon fiber and aluminum framed variants. For 2005 there is the already popular TT (TerraTrike) 3.6 model with a host of upgrades. At \$1,899, the TT 3.6 is the most affordable enthusiast trike sold in North America. (There are cheaper trikes, but they are heavier.) We're very excited about what they are doing and the incredible progress they've made over the years. (See RCN 087 and this issue). Contact: [www.wizwheelz.com](http://www.wizwheelz.com).

## Other builders

**TriMuter:** Jerome Hediger, the US rep for Greenspeed, also has his own line of trikes. The Trimuter is a 3x20" Chromoly touring trike that retails for \$2,885 crated. Contact: [www.trimuter.com](http://www.trimuter.com).

**Organic Engines** builds trikes in Florida. The Triclops model starts at \$2,300. Contact: [www.organicengines.com](http://www.organicengines.com).

Another unique new entry is the **KMX Kart** from the UK. Their website says, "Now available in the USA for an amazing \$1,299 + shipping and handling within the USA." Contact: [www.kmxkarts.co.uk](http://www.kmxkarts.co.uk).

## STEERING

All of the trikes listed here are under-seat steering (USS). While USS is rare on two-wheeled recumbents, it is the standard on trikes. There are two types of trike USS:

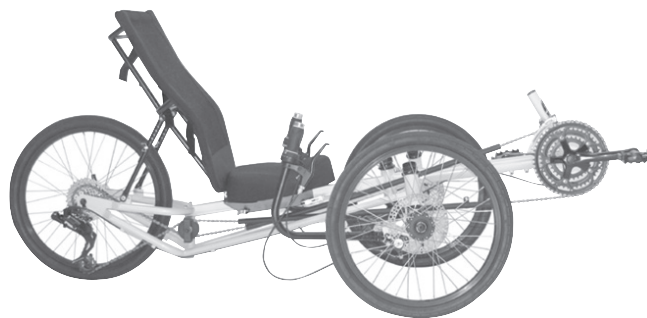
**Indirect Linkage:** Until a few years ago this was the trike standard. A USS handlebar which pivots at the mainframe (on a kingpin or headset) has connecting rods to each kingpin/front wheel. Most linkage-steered trikes are more stable and handle predictably.



*The ICE S — We've had several requests to test this trike. Sadly we don't get the opportunity to review many ICE trikes. The T review in this issue is only our second ICE test trike.*



*The GT-3 has the usual exquisite handling and design features that we've come to expect from Greenspeed. A new GT-5 with disc brakes and upgraded parts is available now.*



*The new Sun Tadpole, priced from \$1100*



*The WizWheelz carbon fiber Edge was reviewed in RCN 087. What a cool trike!*

**Direct:** These are independent handlebars that are mounted onto the kingpin assemblies combined with a connecting rod between the front wheels. This setup offers a very responsive (read: quick) and direct feeling steering. It is also lighter and simpler. This is becoming the industry standard because Catrike uses it on all models, and WizWheelz uses it on two models (Edge carbon fiber & Edge AL).

**Front End:** Trike front-ends are simpler versions of what is on your car. The front wheels are held by kingpins, which spin on kingpin bushings (brass and sometimes plastic) or on bicycle headsets (ICE and Catrike). Headsets rotate fluidly and gracefully, and bushings have some friction and can dampen steering. Both are good systems and which you like best will be a matter of personal preference.

**Toe-In:** This is the most crucial setting on your trike. This is the measurement at the inside most forward point of the front wheels, and the inside measurement at the inside back of the front wheels (half way up). Most trikes are set so the wheels are slightly toed in. If the wheels are toed out it could lead to handling problems.

## TRIKE STABILITY

**Performance:** Weight is important to performance. Everything else being equal, the lighter trike will accelerate faster, sustain speed easier and be overall faster.

There are other performance variables as well: Trikes with 16" wheels will accelerate faster, while those with 20" wheels will hold their speed better. The lower trikes will also be faster, but keep in mind that your personal comfort on the trike can overcome most of these minor details. Another factor is that trikes with more stable handling will be more controllable at speed.

**Stability:** Trikes are unique and exactly what makes them stable can be a bit of a mystery. Also, the term stability means different things to different riders. In saying all that, imagine a trike is a 3D pyramid: width and length add stability, height takes away stability and a low center of gravity (or seat height) adds stability. This is a simplistic view, but you get the idea.

Sixteen-inch wheels are lighter, more compact, accelerate faster, turn sharper and have become the wheels of choice for sporting trike riders. They add a degree of liveliness to the ride of any trike.

Twenty-inch wheels are heavier, tougher, retain speed better and are more suited for commuting and touring. There are some old school performance trike designs that use 20" wheels. These can be very fast as well, but keeping the weight low is more difficult.

Each trike rides a bit differently. What feels good to a newbie may not work for a seasoned enthusiast, so if possible ride as many as you can. If not, learn as much as you can, and try

to make a determination of what will work best for you.

**Handling:** The way in which these trikes handle varies by model. I have found that 20" wheeled models with fixed seats and indirect linkage steering are handle the most predictably. Trikes from ICE and Greenspeed have the best handling, with WizWheelz being a close third. The WizWheelz does not have a fixed seat, and it has no triangulation, so the frame flexes more and offers a smoother ride.

Direct-steered trikes are all very responsive and sporty handling at speed takes some getting used too. Direct-steered trikes also have more brake-steer. Riders can counteract this by applying a very slight forward pressure on the side on which they are braking. You must be very careful as you learn to control your trike at speed. These trikes are within the reach of most people, especially on flat, smooth roads and bike trails. Our concern is primarily for riding in traffic and fast descents.

**Handling at Speed:** Controlling your trike at high speed will require: a trike with a very refined steering geometry and little brake steer, and/or careful and equal modulation of the individual brake levers to keep equal pressure on both brakes and/or road hazard avoidance.

Braking modulation alone can limit how fast you are willing to descend steep hills. I've heard stories about new trike riders veering across traffic, and losing control and flipping over. Practice braking at speed, know your limits, watch the road, and ride with caution.

## WHEEL SIZES

**26"/20":** Years ago this was the standard wheel size for trikes. In the quest for performance, trikes got lower and the full-sized wheel seemed too large. I can recall sitting on a 26"/20" trike and having my head hit the rear tire or rack. Also, the larger rear wheel moves the center of gravity forward and makes the rear end light, which can make for tail-wheelies during hard braking. Trikes that utilize full-size rear wheels are mostly long and stretched out models for racing.

**3x20":** This is the most common wheel combination. Most trikes use the 406mm BMX size 20" which is a recumbent standard. It works best for new riders and commuters (strong wheels + robust tires) and is found on some performance trikes as well.

**3x16":** The 349mm 16" wheel has been the folding bicycle standard wheel for many years. It is smaller, lighter, accelerates faster (but doesn't retain its speed as well), turns more sharply and allows for a lower trike and center of gravity. These are ideal for folding or take-apart trikes.

**349mm 16"/451mm 20":** This setup is used on the Catrike Speed and gets the front end lower. This results in all the benefits of the smaller 16" front wheels, but with the added gearing capabilities of the taller 451mm 20"

front wheel (taller than the more standard BMX size 406mm 20" front wheel).

## FRAME MATERIALS

**Steel:** Aircraft Chromoly is the strongest frame material, it can offer a more cushioned ride (trikes with triangulated rear ends can also be very stiff), and has been the industry standard. Like the road and MTB worlds, this will probably eventually change. Steel frames are heavier and they will rust if not taken care of.

**Aluminum:** Aluminum is lighter, and has a shorter fatigue life, is usually stiffer and it transmits more road shock. Carefully selected aluminum can make for a very light frame that is also affordable to build. Most aluminum trikes are heat-treated after they are welded to preserve the integrity of the material. Also, aluminum does not rust. The downside is that it cannot be repaired once heat-treated. The upside is a trike that weighs 10 or more pounds less than steel.

## FRAME/SEAT DESIGN

**Fixed Seats:** Catrike and some non-folding Greenspeed models have fixed seats that are an integral part of the frame, and the seat frame connects the rear stays to the cross-member. This rigidity makes for better high speed stability and less tensional twisting in the frame. However, it can also make the ride stiffer.

**Bolt-On Seats:** These are used for easily transportable trikes (Greenspeed GT-3/5) and with trikes where the seat (instead of the boom) slides for rider adjustment. These are really the only reasons to have a bolt-on seat. Both are necessary tradeoffs if you need a folding trike or want a sliding seat (with no chain or boom length adjustments required).

**Seat Recline:** Racing and performance trikes have seat recline angles of 20° to 35° and are often fixed (integral seats). These can be difficult to get accustomed too, but make for very fast and aerodynamic riding positions. Touring, commuting and recreational trikes have seat angles of 35° to 40° or more. Trikes like the ICE budget series (T, Q, & S) and WizWheelz have adjustable seat angles. I develop neck and shoulder pain when my neck is cocked forward (chin to chest) too far. If the seat is reclined too much more I develop pain after 60 to 90 minutes of riding. For me 35° to 40° is perfect. Some riders are not bothered by this at all. As a default, new trike riders should choose a more upright position unless they already know what works (for instance, if you already own a recumbent with a very laid-back position).

**Headrests:** Several manufacturers offer head- and neck- rests for models with very laid-back seats where you have to bend your neck (chin to chest) to look straight ahead. Headrests are probably unnecessary on models with more upright seats. Headrests don't always work as intended. Many interfere with the back



of your helmet, so a neck rest is a more usable item. Even these can add to road vibration, but can offer some relief on very laid-back designs.

## GEARING

Gearing is the biggest issue facing the small-wheel trike buyer. Most bicycle components are designed for bikes with 26" and 700c rear wheels. Using these components means that you'll have very low gears, so builders must be creative to achieve adequate gearing. Low gears are not the problem, as it is easy to get a 15-20" low gear for hill climbing. Getting high speed open-road gears over 100" is a problem. (Here's the quick guide to gear-inch calculation: Low gear - inside front chainring divided by large rear cog multiplied by rear wheel diameter; High gear - outside front chainring divided by small rear cog multiplied by rear wheel diameter.) You can see how rear wheel diameter plays an important part in recumbent gearing. (See also RCN 079 page 2 and 086 page 18 for more information).

Those who do mostly flat bike trails can utilize a gear range from 25-30 on the low to 100-120 on the high. Those who climb steep hills, mountain passes or carry cargo will want a low gear of 15 or so gear-inches, to a high of 90 - 100 gear-inches. Minimalists can easily use standard parts on trikes with small drive wheels; it just means that you can't pedal at much more than 20 or 25 mph. Your preferences may vary depending on your trike, terrain and personal fitness.

## DRIVETRAIN OPTIONS

Here are some creative options to achieve higher (or lower) gearing:

**Schlumpf:** This company builds two speed bottom brackets with lower gearing (Mountain Drive) or higher gearing (Speed Drive). Schlumpf drives are shifted by a heel button on the end of the bottom bracket spindle. This is a simple, elegant and jewel-like option, though it is expensive.

**SRAM DualDrive:** This is basically a 3-speed internal gear inside a cassette hub, making for 24-27 speeds at the rear wheel. Gear #1 is a reduction, #2 is a 1:1 and #3 is an over-drive. They add weight and complexity and are definitely less popular than five years ago (on recumbents). The trend on trikes seems to be to just live with lower gears and simpler drivetrains.

**Capreo:** This is a Shimano component package that has been designed for bicycles with small drive wheels (16" or 20"). Instead of the traditional 11-tooth small cassette cog, the Capreo has a 9-tooth (cassette with a 9-26 tooth cog range; RCN advertiser Zach Kaplan offers a custom wider range Capreo Cassette). This easily gives you higher gears. Keep in mind that small cogs wear out faster, and the Capreo cassette is relatively rare, so it might be a good idea to keep a spare. The Capreo



*The folks at the first Catrike Rally held in Florida this past February are having too much fun. We hope this becomes a yearly event. Photo courtesy of Larry Varney*

also requires a special hub, which could mean a new wheel and could cost about the same as installing a Schlumpf drive.

## CRANKS

There is a micro-trend in recumbency to use shorter crank arms (described in RCN 086, page 18). I used to have 170mm-175mm cranks and now they feel just too long. Shorter crank arms make you spin better, require lower gearing and are easier on your knees. I am currently experimenting with 140mm cranks on my Greenspeed GT-3. Short cranks are a factory option on Greenspeed trikes.

**Rotor:** This crankset offers a mechanical advantage to help eliminate the dead spot in your pedaling circle. Rotor cranks start at \$729 and are available in sizes from 165mm. For more information, see RCN 084, page 24 or [www.rotorusa.com](http://www.rotorusa.com).

## SHIFTERS

You will find two different types of shifters on recumbent trikes:

**SRAM Twist Grip:** These shifters are popular and affordable, though they were not designed to be used in the vertical position. They require more force to shift and you must be careful not to make an unplanned steering maneuver while twisting. The lower end twist shifters (3.0, 4.0, 5.0, and possibly MRX) won't last as long as other types of shifters.

**Shimano Dura Ace Bar-Ends:** These shifters are time-proven and will last for years. They are mounted to the ends of the bars, facing rear or front to suit your preference. They are easy to shift have a fluid and graceful feel. The upgrade is \$70-\$100, but well worth it.

## BRAKES

Several different types of brakes can be found on recumbent trikes:

**Drum:** These brakes are incredibly simple, smooth, and offer a quiet velvety feel. The only maintenance they should require is adjustment for cable stretch. Brake pads last a long time. Braking power is not as good as with discs, but some feel that discs are really overkill on

these trikes.

**Mechanical Disc:** Discs are all the rage in MTB circles, and the buzz has now spread to recumbent trikes. These are the simplest disc brakes which are operated by a cable between the handle and caliper. They are reasonably simple to set up and adjust. They are more powerful than drum brakes, but require more maintenance and frequent adjustments. I adjust mine every two weeks with the turn of a hex wrench and spinning the wheel. The biggest problem is with rotors going out of true (we've had two trikes delivered with warped rotors). Working on these brakes is fairly easy, and it is recommended that you learn to do it. A warped rotor means an incorrect adjustment or a dragging disc. I like Avids and Shimanos the best, but haven't had any problem with Hayes either. The problematic models for us have been the Promax which don't have much adjustment range.

**Hydraulic Disc:** These brakes have pressurized fluid in the lines which require less mechanic leverage to activate. It is also possible to connect both front brakes to one lever for equal braking pressure on the front wheels. The downside is that one must learn how to bleed the brakes and work with nasty hydraulic fluid (or make sure your local mechanic knows how to do this). While the braking power is improved with hydraulics, field service is much more difficult.

**Parking Brake:** Some sort of parking brake is essential. ICE trikes have a spring loaded button on the brake lever. This is a most elegant and user-friendly solution. Our WizWheelz trike came with a velcro strap to wrap around the brake handle. This is simple and it works, but not as well as a button.

**Rear Wheel Brake:** Some entry level trikes have a rear brake connected to a front brake lever, and the two front brakes connected to a single lever. If pulling equally, this can throw the trike into a spin. This could be a safety issue and is not recommended.

## CHAIN MANAGEMENT

Methods vary for routing the chain from the



The ICE Q or Q NT (narrow track) is the ICE model that will fit the bill for those something in between the touring T model and speedy S model.



The new KMX Kart is available in adults and kid sizes



The Hediger TriMuter

front crankset to the rear wheel. The most direct path is the easiest and has the least friction. Chain tubes and chain idlers are used to route the chain. How long these parts last varies by manufacturer, type of idler, rider, terrain, maintenance and the quality of idler used.

**Idlers:** The quality of chain idlers will vary by brand. The machined metal idlers from Greenspeed and TerraCycle (after-market upgrade) will have a longer life. Some idlers have a shorter life span. The WizWheelz idler life span is 2,000-4,000 miles according to WizWheelz' Jack Wiswell. All trike owners should have a spare set of idlers. I actually had an idler (on a SWB) cut in half by the chain. Naturally, I was 25 miles from home and it was at dusk.

## WEIGHT

According to some (perhaps those who build heavier trikes) light weight isn't everything,

I'll admit I ride with at least 6-10 lbs. of added gear on my trike, but it makes a difference if your starting weight is 29 lbs. or 41 lbs. North Americans love lightweight bicycles (and tricycles).

I've read that 10 lbs. on a road bike is worth one minute per mile. I'll bet it is more than this on a trike going uphill. On the downhills, the heavier trike will go faster.

I honestly didn't think weight was that big of a deal for tricyclists, but it is. Several readers I talked to think a 40 lb. trike is just too heavy, and you can now get affordable lightweight trikes. Other manufacturers seem a bit edgy about the new lightweight competition, and one builder justified the extra weight by saying, "we certainly don't add metal for the hell of it."

One RCN reader said, "Ride your 27-lb. trike up a steep hill, and then strap on a 10-13-lb. load and do it again. You will notice the weight increase." Point well taken.

## HOW TO HAUL YOUR TRIKE

New owners should consider how they will haul their trikes before they order one. Carrying a trike on a roof rack is a bad idea, because they are too heavy and awkward to lift onto roofs.

Receiver hitch racks from [www.ATOC.com](http://www.ATOC.com) and [www.hitchrider.com](http://www.hitchrider.com) will work fine. I first saw the Hitchrider at the Catrike website carrying two trikes on the back of a PT Cruiser.

Selecting a trike for your car, or a car for the trike is also a good idea. I've been looking for a car to haul my trike, and have considered a Chrysler PT Cruiser, the Scion Xb, the new Chevy HHR or a small pickup. Trikes will fit in some small wagons. The VW Passat, Jetta, Ford Focus and Toyota Matrix are worth a look. The Greenspeed folding trikes should fit into most small hatchbacks (but take careful measurements). Of course minivans (a bit boring) and SUVs (not politically correct) will work very well.

**Travel:** If you are planning to take your trike

on airplanes, a Greenspeed folder (GT-3/5) or a model equipped with an S & S coupler would be the best choice.

## TRIKE SAFETY

I can't tell you that you'll feel safe riding a trike at 25, 30 or 40 mph down a hill. Besides safety, trike stability varies by make, model and rider adaptability. I also can't tell you that you'll feel safe riding in light or heavily traffic on a trike. Only you can make these determinations for yourself.

On a trike, you are very low to the ground. When the seat height is raised, you can be seen better, but the trike will tip over easier. Everything is a compromise.

When riding down the road on a trike, I take more of the traffic lane. Some of the bike lanes aren't wide enough for trikes (a few spots). The overall result for me has been safer cycling because of the changes in how I ride (see RCN 087 Safety). However, I would not want to ride a low trike in heavy urban traffic.

On bike trails and on smooth country roads, trikes are pure heaven to ride. Carefully consider where you'll be riding and see if a trike can work safely for you.

## HOW MUCH TO SPEND

For the most part, the more money you spend, the better trike you will get. Enthusiasts who plan to use their trikes regularly should plan on spending \$2,000-\$3,000 (and still won't end up with a high-end trike). There are great values in the various pricing segments. I think it's fairly obvious that the WizWheelz TerraTrike and Catrike Road are the winners in the enthusiast category for quality and value. And nobody will compete with Sun in the low end of the price spectrum. As you move to the higher end of our price range (\$3,000+), the fine Greenspeed and ICE trikes come into the picture. Remember that if you buy a cheap trike and ride the wheels off of it, you could spend more money on parts replacement and maintenance.

I've tried trikes from all of the "enthusiast" brands (Catrike, Greenspeed, ICE & WizWheelz) and I have liked them all. There are weight, ride, handling, steering, component and comfort differences between them. The lightest trike listed was 26 lbs.; the heaviest was 49 lbs. The common weight for a steel trike is around 40 lbs. For weight weenies, Catrike's direct-steering aluminum Road model is the all-around choice with a starting weight of just 30 lbs. Weight is important, but not everything. It is best to try several trikes if you can, and see which works best for you.

Recumbent trikes are incredibly fun and are the most popular new trend in recumbent cycling. Whether you are already a recumbent rider or a new enthusiast planning your first purchase, remember to find a trike that works well for you, have fun, and ride safely. ♦

... Cont'd from cover: *WizWheelz TT 3.6*

- Improved kingpin design
- Improved welds
- Improved seat mounts

## COMFORT

The TT 3.6's seat frame is made from heat-treated aluminum. The full mesh seat is breathable nylon and is quite comfortable. The seat back feels roomy and I have no pressure points. There is no lumbar bend, but about 30% of the time lumbar bend hit me in the wrong spot anyway. I may try a strap on car-type lumbar pillow, but so far I don't really need it. The seat position adjusts with ball-detent pins (à la RANS) from 40° to 70°. There are six different positions.

## FIT

The TT 3.6 will fit most riders well. The trike comes in three sizes and has an adjustable seat position, so there is no fussing with adjustable boom or chain length. If you plan to share your trike with a rider, resetting the seat position takes just a few minutes. There is no better choice than the TT 3.6.

There are three frame sizes for the TT 3.6. The basic frame has the same dimensions with all three sizes. There are three different sized boom lengths to fit riders of different heights (booms are interchangeable).

The TT 3.6 seat four seat mount positions and the frame has two different mounting holes. The adjustment range is not infinite, though the two sets of staggered holes provide you with seat mount positions approximately every 1/4" (except at the end positions), according to WizWheelz. The seat mounts via a bolt and lock nut. Be sure to tighten down the lock nut good and tight. It took me two adjustments to get the seat into the right position.

## RIDE

The TT 3.6 has a very stable indirect/linkage steering geometry. The wide USS bars pivot on a headset-style bushing. The TT 3.6 is very stable and handles easily up to medium range speeds of 20-25 mph. It is a more recreational/sport touring geometry. I can ride the trike with no hands, or brake with one hand while I signal or breeze along controlling the trike with a light touch of my palms.

Like most trikes, the TT 3.6 has a bit of brake steer. If you pull on one brake lever, the trike will veer slightly in the direction of the side you are braking. However, the linkage steering makes it much more manageable and less noticeable than the direct-steered trikes, which tend to veer more strongly.

The TT 3.6 has some pedal steer as well, and the tail end wags slightly with each pedal stroke (once up to speed). The harder and faster you pedal, the more you notice it. The TT 3.6 does this more so than the carbon fiber Edge



*Our WizWheelz TT 3.6 all decked out*

model, which leads me to believe that it is related to the stiffness of the frame. The TT 3.6 does not have a triangulated/trussed rear frame section. The rear frame of the TT 3.6 is much like the modern highracer frames. This type of rear end provides a bit of suspension and a smooth ride.

On a ride with other recumbent riders, the TT 3.6 held its own. Perhaps a bit slower on flats and up hills unless it is windy, in which case I'm faster. Where I am quite a bit slower is on fast descents. I brake to keep my speeds in the low 30 mph range, where I might let it go to 40 or 50 mph on a fast two-wheeler. The smoother the roads, the faster you'll be able to safely control the trike. Riding the TT 3.6 takes less effort than most recreational two-wheelers. My average speeds around town have increased a bit on the trike, and there is no time wasted with stops/starts, clip-in, clip-out. Your feet are always on the pedals.

A fellow rider commented to me that I was slouching to my left side while riding the TerraTrike. My theory is that I was compensating for the crowned roads. I asked several trike experts, and they all agreed with me. This is a unique point about trike riding that you don't hear much about. Mick Sims of Greenspeed said, "It's just a trike thing and something that may occur to you every now and then but doesn't really affect your riding." He went on to say that some riders swap their front tires to wear them evenly.

Trike riders must watch out for potholes, ruts, irregular pavement and must pay much more careful attention, plan your routes, ride carefully and use good sense.

**Soft Braking:** While perusing the TerraTrike group on Yahoo, I came upon a discussion among WizWheelz trike owners discussing a technique called *soft braking*. It was

suggested that riders *not* grip their handlebars so tightly while braking on descents. Instead, it was suggested that riders hook their thumbs around the bars with a light touch while applying force on the brake levers. This allows the trike to track naturally while braking, and results in a less twitchy ride than if you have a firm grip on the bars while braking. I tried this on some moderate hills with good success, but I suggest that readers be very cautious on fast descents, and experimenting with soft braking. Thanks to the WWOG group for this tip. (<http://groups.yahoo.com/group/wwog>)

## FRAME

**Frame:** The TT 3.6 frame and parts are built by WizWheelz and mostly local vendors in the Hastings, MI area. Over the years we have seen the quality of WizWheelz frames continue to improve. This latest one is the finest so far. One noticeable upgrade is the new cross member (main) frame junction lug and improved weld quality. The overall build and finish quality of this trike is excellent and rivals trikes costing much more.

**Steering:** The TT 3.6 has a double link centerpoint with full Ackerman steering geometry. The handlebars are heat-treated aluminum and can adjust fore/aft for angle, but not inward, outward, up or down.

The hub mount, kingpins and steering bushings are Oilite oil impregnated bronze bushings. The lifespan of the kingpin and hub mount bushings is approximately 7,500-10,000 miles. WizWheelz has never had to replace a steering bushing, according to WizWheelz' Wayne Oom.

The handlebars turn on bushings and connect to the hub mounts via a steering rod. This makes for a dampened effect in the steering. With headsets, the steering is more fluid and

requires less effort. On the TT you steer a direction, and the bushings add a very slight hesitation (friction) as you return to center. Bushings are simpler, cheaper and offer some dampening. There are fans of both. Greenspeed uses bushings and ICE uses headset.

Toe-in is a crucial setting for trike handling. The TT 3.6's toe-in was also set at the factory.

**Weight:** The target weight for a TT 3.6 is 37.5 pounds (medium boom). Our test trike (long boom) weighs 40.3 pounds with a rack, fenders, flag and pedals. The TT 3.6 is heavier than previous TT's, "The weight increase is a combination of some heavier components, and more robust frame design. The new cast lug (cross-member) is one example. We wanted to build an indestructible TT 3.6 for touring and commuting," writes Jack Wiswell.

## COMPONENTS

WizWheelz has chosen decent components that work well for this affordable trike. We've had ours in daily service since January 2005 and have had no problems or failures. We did order ours with Shimano bar-end shifters and upgraded the tires to the IRC Metro 1.25" 100 psi. (We snatched them off our Edge test trike.)

**Gearing:** The gearing is about perfect for this recreational/commuter/touring trike at 20.3-84 gear-inches. While some may find it a bit on the low side, I prefer low gears on trikes (steep, yet enjoyable trike hill climbing). The high is almost a moot point. I tend not to pedal much over 20 mph these days, and you can certainly do that with the stock gearing. To get a wider range of gearing you can install an 11-32 cassette, which will give you 18-91.5 gear-inches. (Note: The reason our gear-inch figures differ from some manufacturers is that we don't figure it by the wheel size (20"); we actually measure the wheel and tire diameter.)

**Shifting:** WizWheelz allows you to choose SRAM Rocket twist grip or Shimano Dura Ace bar-ends. The Rockets have a decent reputation, but I much prefer the bar-ends. They are the finest quality shifters made, have a friction option and shift smoothly and with less effort. Twist grips require more effort (especially front shifts). Bar-ends are vastly superior quality and should last indefinitely. The



Rear wheel, frame and accessories



Cross-member, kingpin and steering

twist grips probably won't last as long.

**Braking:** Our TT 3.6 (first batch) came off-fitted with Shimano Deore disc brakes. They were adjusted perfectly, and have only needed only minor adjustments in 400+ test miles. The brakes worked. I adjusted the pads every two weeks during daily use. I rode one day in the pouring rain and the brakes started squealing badly. They were fine once they dried out, but their rain performance was disappointing. Future TT 3.6s will have Hayes One mechanical discs, which are fine, the same brakes that come on the Edge.

**Chain Management:** When I first tried out a WizWheelz trike back in 1998, I did not care for the chain routing. The chain was noisy and

ran at extreme angles (to get the chain to shadow the lines of the frame). I can see why it was set up that way, but I don't like noisy drivetrains at all. Imagine my surprise over the 2005 TT 3.6's nearly silent drivetrain. A series of two front and two rear idlers still shadows the lines of the frame — but refinement is good! There is no waffling whooshing noise from chain tubes. The only way it could be better is if they ran the chain through the frame. (Oh yeah, they do that on the carbon fiber Edge model.)

**Chain Idlers:** WizWheelz started using a harder compound for their idlers starting with the TT 3.5. "Most folks get a couple of seasons out of a set of idlers. They wear about as fast as the tires. Aggressive riders, and those riding in hilly areas will see a little shorter lifespan from their idlers. We always recommend customers take an extra set with them on any tour, just in case," writes WizWheelz, Jack Wiswell.

TerraCycles has a WizWheelz chain idler replacement with aluminum or optional Titanium cogs. [www.terracycle.com/parts.htm](http://www.terracycle.com/parts.htm)

**Wheels:** Something has to give when your trike is priced significantly lower than the competition. While not exactly forgettable, the wheels could be better. We had no trouble with our TT 3.6 wheels; they stayed in true with all spokes intact for 400 or so miles of testing. The rims are Femco, which I honestly know nothing about, and the wheels are built for WizWheelz in Taiwan. New for 2005 WizWheelz will offer lighter weight, hand-built and trued Velocity wheels from the Edge model (\$299 option). Serious riders should consider this option or perhaps upgrade at a later date.

**Tires:** The TT 3.6 is equipped with 40 psi Chen Shin 1.75" tires that are designed to be very stable riding and comfortable tires. I rode 15 miles on these tires, and then took the IRC Metro 1.25" 100 psi tires from the Edge. The IRCs are now optional.

## HOW TO BUY

WizWheelz sells direct and through dealers (as of the 2005 season). If you buy factory direct your trike will arrive fully assembled. All



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you have to do is adjust the seat, fill the tires, light the fire and go. The TT 3.6 takes a bit longer than the Edge to get adjusted because you have to find the proper seat mount hole. It took me twice to get it right, so it took maybe 15 minutes to complete dial-in. (That is *very* fast). If you don't like your new trike, WizWheelz has a 30 day money-back guarantee (on direct sales).

## COMPARABLE MODELS

Most people will be comparing the TT 3.6 to Sun trikes or the Catrike. The Sun models are new and we haven't tried them. They are noticeably heavier (over 10 pounds) which is a drawback.

The 2005 Catrike Road costs more (\$2,350), but weighs just #30.

The ICE model T is similar. It has a four-piece frame, drum brakes and is more expensive at £1,276 (approx. \$2,400). I found the ICE to have slightly better high-speed handling and steering geometry, but to be rougher riding and not as fast as our TT 3.6.

Greenspeed makes the GTO and GTR which are comparable, but they are more than twice the price of a TT 3.6. The GT-3 (16" wheels and folding) is \$2,600 and is more of a sport touring/travel trike.

WizWheelz also offers the TTR (\$2599) which has a similar geometry to the TT 3.6, but has a lighter aluminum frame and upgraded components and weighs #31. The TTS (\$2199) has the same aluminum frame, but TT 3.6 components, and weighs #32. An aluminum frame version of the (\$2999) model also weighs #30.

I asked WizWheelz Jack Wiswell how the aluminum TTR and TTS compare to the TT 3.6 and he writes, "*The TTR/TTS frame feels quicker and more responsive. It accelerates faster off the line, and climbs better. This is due to its lighter weight and stiffer frame material. It isn't as plush as the TT 3.6, but it is far from harsh. The frame design still lends itself to a lot of shock absorption. The steering system feels about the same as a TT 3.6. Maybe a hair more solid, again due to the stiffer frame material. The frame doesn't flex as much under hard cornering. The trade off of the TTR/TTS is the lower weight limit. A larger rider can't load it up with cargo and expect it to hold up for a trip around the world. That's what the TT 3.6 is for. Also, of course, aluminum material is more expensive.*"

## EXTRAS

WizWheelz offers a host of accessories: A cool safety flag with logo (\$29); a Blackburn Road mirror (works with bar-end shifters; \$20); a small seat bag (\$65) that is large enough for a mini pump, a small tool kit, a few dollar bills and your keys; mini-rollers to train on (\$145);



Rear frame, seat attachment and USS linkage/bars

spare idler kit (front & rear, four idlers \$65); an accessory mount (\$20) that fastens to your front derailleur tube so you can mount a headlight and a computer; and don't forget a WizWheelz T-shirt.

*Moonlight Chronicles* publisher Dan Price tested out the new WizWheelz Old Man Mountain 20" pannier rack on his 4,750 mile cross-country tour on his TT. You can read about this ride in MC issues #32, 33 & 34. Find purchase info at [www.moonlight-chronicles.com](http://www.moonlight-chronicles.com). The rack has a great mounting kit, and bolt on pannier hooks. This is one of the best recumbent racks we've seen.

WizWheelz also offers a 135-cubic inch seat back bag (\$65). You will need this because no other bag will fit behind the reclined seat. The other choice is to opt for a rear rack and bag or panniers.

**Fenders:** WizWheelz uses modified Planet Bike fenders with four struts on the front wheels. They built a jig to the fender struts to mount to their front disc brake caliper bolts. Installing the front fenders is relatively easy, but I suggest that you be very careful doing so as I managed to shatter the plastic around the rear fender's mounting bolt (I just trimmed it and re-drilled a hole). My fenders have been rather noisy (rattling) and on one ride I had 1 of the 4 strut mounts come loose several times. I took each strut apart and used Loctite on the threads.

The fender mount is a bit flimsy, but they work okay. I did have the struts pop off a few times (prolonged vibration on rough roads). I managed to break two fenders, both times were my fault, and both times WizWheelz replaced the parts at no charge. After problems with Planet Bike fenders on several recumbents, I'm just not a fan.

## COMPANY

WizWheelz has been in the business of building recumbent tadpole tricycles since 1996. They are a leader in the US in recreational and touring tricycles.

## VERDICT

The TT 3.6 is a much better trike than the first WizWheelz trike years ago. WizWheelz has improved the TT with each new update and most owners seem happy with their trikes.

One owner wrote us to say that he liked his TT, but it cost more to maintain than his Greenspeed GTO. I think trikes in general, will require more maintenance than two-wheelers, and the TT perhaps more than more expensive trikes. This might include kingpin or bushings, and chain idlers or even drivetrain parts (better quality/more expen-

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sive components can last longer). It makes sense to keep some of these proprietary parts as spares. Replacing these parts should be part of normal maintenance, just as you would replace your chainrings, chain and cassette every so often. The harder you ride, more miles you put on your trike and more inclement the conditions, the more maintenance you'll need to perform. Our TT 3.6 had more miles put on it than other test bikes and performed flawlessly throughout the time it was here.

Some have been critical of the TT's high speed handling. I don't have any criticisms of the TT's handling but I don't have the nerve to do 45 mph down steep hills. I finally managed to get it up to 32 but that is it. When the handling criticism was brought up on the WWOG newsgroup, I do not recall seeing any owners complaining, but I have a theory: the WizWheelz TT 3.6 is an all rounder commuter/recreational/touring trike, and not a high speed performance trike. The smooth ride of the TT 3.6 (smoother than all other comparable trikes I've ridden) is due to the non-trussed rear end (no triangulation) and bolt-on seat. At high speeds, the trike has a tendency to *dance* a bit (a combination of pedal steer and a rhythmic tail wag) more than other high performance trikes. So for us mere mortals who cruise bike trails, commute or tour, and don't pedal at high speeds down mountain passes, the smooth ride of the TT 3.6 is a big plus. Some other benefits include:

- Lower bottom bracket: The BB is just 4" above the seat height. While some other trikes higher BB's give me toe numbness, I do not experience this with the WizWheelz trikes.
- The sliding seat makes set up a breeze, and adjustments for other riders is super easy. This would make the WizWheelz trikes ideal for rentals and tours. Dealers will love not having to reset boom and chain lengths for each test ride.

## WizWheelz 40 PSI Tires

I asked WizWheelz Jack Wiswell why the TT 3.6 uses 40 psi tires. Here is his response:

**Jack Wiswell:** We spent a lot of time this year testing different tires. We had hundreds of people ride our test trikes at different events and give us feedback. To our surprise, the lower pressure (35 - 55 psi) tires were almost unanimously the favorites. They handled better than any of the high pressure tires we tested. We then conducted some in-house tests to figure out why.

As with a lot of bicycle parts, the tires on a trike don't behave the same way as they do on a two-wheeled bike. The two main reasons aren't groundbreaking discoveries, but more common sense:

1. The lateral forces on the tires when turning a trike are much greater than on a two-wheeled bike.
2. The weight of the rider and machine is

• Adjustable seat recline: WizWheelz trikes have a seat recline adjuster method very similar to the RANS and Bacchetta bikes. You're not stuck making the decision on what seat angle you have to live with, you can try out different angles and see what works for you.

WizWheelz isn't portraying the TT 3.6 as a super performance machine. It's just a cool tadpole for average folks who want to ride trikes. WizWheelz has a tremendous new commitment for 2005, with new models and options — all available from your local recumbent dealer. These trikes are of fine quality, pleasurable to ride, and your dealer will also be in love with them after the first time they take one out of the box (fully assembled delivery option).

My dealings with the WizWheelz factory has been exceptional. Trikes are becoming a big part of what we do here at RCN, and WizWheelz and the TT 3.6 is an easy recommendation. The trike is built in the US, is affordable and you just won't find a better value for your first trike (or second or third). ♦

## FOR:

- Sliding seat; no boom or chain adjustments
- Best value in an all rounder tadpole
- Most refined TT to date
- Smooth, comfortable & shock absorbing
- Superior value
- Great warranty & money-back guarantee

## AGAINST

- Bolt-on seat not as stiff as frame seats
- Non-infinite seat adjustment
- Tendency to "dance" at high speed
- Heavier than competitors' models
- Heavier than previous TT 3.6
- 40 psi tires (okay for newbies)

distributed over more tire area (because there are three instead of two).

Now, when we tell people this they say 'well duh, anybody can see that.' Although every trike rider seems to know this, nobody does anything about it. We all keep riding along on our high pressure (80 - 120 psi) bike tires. Like most bike geeks, I too had this illusion that higher pressure = better tires.

Once we took the time to really examine the differences between the tires we were testing, we found that the lower pressure tires were acting more like car tires in cornering. They were more supple, so they would rotate slightly on the rim when pushed hard in corners. This keeps more rubber on the road through more of the turn. This is why the trike handled better.

We also found that the difference in load on the tires by using three instead of two was greatly underestimated. The amount a

## MORE INFO

Web: [www.wizwheelz.com](http://www.wizwheelz.com)  
 WWOG (WizWheelz Owners Group)  
<http://groups.yahoo.com/group/wwog>.

## NUMBERS

Wheelbase: 39"  
 Seat height: 9.5"  
 Crank height: 14.25"  
 Track width: 31.5"  
 Overall width: 34"  
 Seat angle: 40°-70°  
 Weight: 37.5 lbs. (WW: medium boom)  
 Ours weighed 40.3 with rack, fenders, and platform pedals  
 Weight limit: 250-300 lbs. (contact factory)  
 Gears: 27  
 Gear-Inch Range: 20.3-84 (19" whl./tire dia.)

## FRAME

Frame: TIG welded 4130 Chromoly  
 Color: Sparkle red powdercoat with clearcoat  
 Handlebars: Heat-treated aluminum  
 Seat: Heat-treated aluminum with mesh  
 Sizes: Three boom lengths

## SPECS

Crankset: Shimano Tiagra 30/42/53 170mm  
 Bottom Bracket: Shimano UN52 cartridge  
 Cassette: 12-28 9-speed  
 Derailleur (front): Shimano Tiagra  
 Derailleur (rear): Shimano Deore LX  
 Chain: SRAM PC-59  
 Shifters: SRAM grip shift or Shimano bar-end  
 Kingpins: Brass bushings  
 Brakes: Hayes mechanical disc  
 Levers: Alloy comfort pull  
 Wheels: 406mm 20"  
 Hubs (front): Alloy disc 20mm axle (front)  
 Hub (rear): Alloy  
 Rims: 32° alloy  
 Tires: Blackwall 20" x 1.75" 40 psi  
 Pedals: Platforms

tire *squashes* under weight is much less than on a two-wheeler. So much less, in fact, that you don't really give up speed. The rolling resistance is much closer to the high pressure tires than you might think. This is why everyone was telling us the lower pressure tires felt so much more comfortable, but still felt fast.

Now that we had all of our wonderful new tire data, we set out looking for a good low pressure tire. We ended up having our friends in Taiwan make us a tire. The result is the first trike tire that actually works with the forces of riding a trike. They are produced from the same high quality materials as most good high pressure tires, but simply built for lower pressures.

I know this is a lot of banter for a simple tire question. We just want everyone to know why we're using the tires we chose.

Here is what I think of some of the high pressure tire choices (these are only tires I've



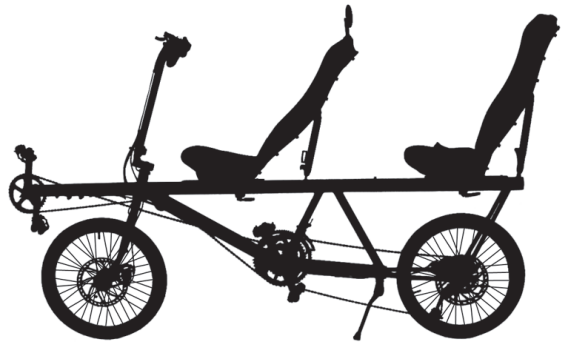
logged lots of miles on):

- Primo Comet 20 x 1.35: decent tire, low tread life.
- IRC Metro 20 x 1.25: my personal favorite, good tread life, little heavier than some.
- Kenda Kwest 20 x 1.5: good all around, not as fast as others.
- Continental 20 x 1: harsh, twitchy ride, fast.

**Bob Bryant Comments:** I put about 15 miles on the stock tires. I then emailed Jack and asked if I could take the tires off of the Edge (IRC Metro 100 psi 1.25") and he said okay. I found the stock tires to be extremely comfortable, forgiving and a on the slow side.

So I installed the 100 psi IRC Metros. I first ran them at 80 psi, and then up to 100 psi. I had my best performance at the higher pressure. The TT 3.6 has excellent handling, and I do not find a high pressure tire to be detrimental to the handling of this trike. I do agree with WizWheelz that new trike riders may want to ride for 25-100 miles with the stock tires before considering an upgrade. Two other tires I plan to try are the Greenspeed Scorcher that is a designated high performance trike tire and the Schwalbe Big Apple (see RCN 086 page 22). ♦

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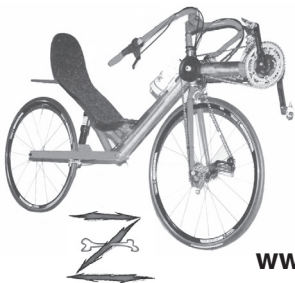
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## RCN Road Test: The Catrike Pocket

### A Short, narrow and light tadpole

By Bob Bryant  
bob@recumbentcyclistnews.com

*“The Catrike Pocket is a fun, compact, recreational tricycle with an upright and comfortable seat. The Pocket can also be used for short-track racing. The Pocket is a high quality trike that fits nearly any budget — and it is hand crafted in the USA.”*  
— Catrike

**TRIKE:** Pocket  
**BUILDER:** Catrike  
**ORIGIN:** Winter Garden, FL, USA  
**STYLE:** Micro tadpole trike  
**USE:** Recreation and short track racing  
**PRICE:** \$1,500

*“All riders — regardless of budget — should be able to afford a light and pleasant trike.”*  
— Paulo Camasmie, Catrike

The Catrike Pocket is the smallest, shortest (4” shorter wheelbase than a Road model), lightest and narrowest trike we’ve ever had roll through the front door here at RCN. This petite little trike weighs a scant 27 pounds and is a dream come true for smaller riders who don’t want to lift a 40-pound trike into the minivan. Another benefit is that the Pocket even fits us non-petite-sized folks.

#### COMFORT

The Catrike seat is part of its space frame, and is about as simple as can be. The seat back

isn’t very tall (this is a tiny trike) which became immediately apparent when I sat my 6’ body down on the seat. There is no lumbar bend, but about 30% of the time lumbar bends hit me in the wrong spot anyway. I may try a strap on car-type lumbar pillow, but so far don’t really need it.

The seat back recline angle is 45° (the 2004 Road models is 43°), and feels more laid back than it really is. The mesh is simple, breathable and comfortable. The only downside is that you can feel the seat/frame tubes. The straps are short and installing them was a chore. Once they stretched out, the length is fine. We didn’t order the optional neck rest, but we should have.

#### FIT

The Pocket will accept pilots with up to a 45” x-seam. At 6’ tall, a 33” inseam and a 44.5” x-seam, I was definitely at the end of the range for this trike. This trike was fine for everyone else in my family, and they all loved riding it. The Pocket is ideally suited for shorter and

lighter-weight riders.

The Pocket has an adjustable sliding boom which requires chain adjustments for each new rider. Perhaps Catrike should consider developing a demo chain idler which spring loads the chain and takes up additional chain slack for dealers and rental trikes who do frequent rider size adjustments. (Vision offered one).

*“The Pocket is certainly the quickest of the Catrikes and it is really not designed for high-speed handling.”* — Paulo Camasmie, Catrike

#### RIDE

This little trike feels ultra-light, and it takes minimal effort to propel. The Pocket quickly accelerates up to bike trail speed, where it feels the most comfortable.

While I could fit this trike just fine, the Pocket had a definite split personality with me onboard. Over the very smooth and flat new pavement in my neighborhood, the Pocket behaved like an autocross race car, zipping everywhere and turning on a dime. It was very predictable and awesome fun. When I ventured out onto the local roads, with their rutted and aged pavement, off-camber turns and fast down hills, the Pocket’s handling became twitchier as my speed approached 20 mph.

I experienced some difficulty in doing a one-handed brake and turn signal from 15 mph. I had to slow way down to accomplish this maneuver. There is also noticeable brake steer, which is to be expected from this narrow, responsive direct-steering trike with strong disc brakes. Planned and practiced fluid movements will be required if you want to ride this trike over rough roads or hilly terrain. This did not seem to be an issue on flat smooth roads or paved bike trails.

Another minor concern was the twist-grip shifting motion of the SRAM MRX shifters. Bar-ends are vastly superior for trikes. The forward-backward shifting motion requires less effort and is easier to coordinate with steering movements than twist grips.

The Pocket ride was not as bumpy as I would have expected from a tiny-wheeled trike with an aluminum frame. The handling is actually very good, but this is the shortest wheelbase trike made. It will be best for smooth bike trails with a more size-appropriate rider.

I asked Catrike’s Paulo Camasmie about the Pocket’s handling. Here is what he said: *“The wheelbase is very short. So it would take some getting used to do one-handed maneuvers at speed. If you are going to brake the right wheel, you want to apply pressure forward on the right handlebar. The wheel will try to steer to the right so you are in fact compensating by turning to the left. This trike has very little brake steer and is maybe only noticeable with a lot of load and at high speed, so we are talking about a slight bit of compensation here.”*



*Having said this, I believe this is still a sport recreational product, not a car, and it should be okay to expect the rider to have some skills developed and body involvement. This is a sport and it should be fun. If we tame the steering too much it would feel sluggish. Trike design is all about trade-offs. We have to build what we believe in and we like the lively feel of direct steering."*

## FRAME

The Pocket has a TIG welded aluminum *space* frame with heat treated handlebars and quick release (adjustable) boom.

**Steering:** The Pocket's steering kingpin pivots on IGLIDE polymer bushings made by Iigus in Germany (<http://igus.bdol.com/cbx.asp>).

These are high quality heavy duty bushings that are easily replaced. As stated on the website, the bushings will develop a small amount of play (a few thousandths of an inch).

Threadless individual handlebars clamp to the kingpin steerer tubes on either side of the trike. They adjust away from your body at an angle, but not up or down or back and forth. The standard position is darn good. A single stabilizer bar connects both kingpins to link the front wheel steering. It sounds complex, but it is as simple as I've seen on a tadpole trike. The steering, kingpins and handlebars takes all of about 20 minutes to set up.

**Fabrication/Finish:** Pockets come in yellow powdercoat. They can also be ordered in red. The fabrication and paint quality is excellent, though some of our yellow paint got rubbed raw on the cardboard shipping box.

**Weight:** Our early 2005 Pocket weighed in at 27 pounds on our digital scale (w/o pedals) which makes it the lightest trike we've reviewed.

## COMPONENTS

**Drivetrain:** The components on the Pocket is very good for a trike at this price level. The Truvativ Touro triple, Shimano Sora derailleurs are driven by a SRAM PC58 chain. The system is shifted by SRAM MRX shifters. I'm not a fan of lower end SRAM shifters. Your best bet is to replace them with bar-ends or higher end SRAM shifters if/when they wear out.

**Gearing:** The gearing on this trike is low: 17.7-78 gear-inches; however, I found it spot on for this ultra-light neighborhood hotrod. The coolest thing about small drive wheels is the unique gearing possibilities. If you recall, the gear-inch formula takes the front chainring, divided by the rear cog, multiplied by the wheel diameter. Well, the wheel diameter of the Pocket is only 16.5", so low gears will never be a problem. Higher gears will be, but 80 gear-inches is plenty useful on a trike of this type. I'm not sure that the Pocket needs a triple crank. The double 39/53 and the stock 11-28 cassette, makes for 23-80 gear inches, which would be ideal.

**Chain Management:** The Pocket has a power-side idler mounted under the seat, and the chain is routed to and from this idler via two chain tubes. The return chain runs through another long chain tube. While a bit noisy, you can reposition the tubes to quiet it down, and you can lube the chain real well. I noticed more shuddering than with other tube systems, but at less than one-third the cost, who cares?

I had some difficulty getting the perfect chain length and angle setting for the rear derailleur. It would make sense to have a dealer who knows Catrikes set this up for you. Catrike also addresses this somewhat in the FAQ section of the website.



*Our Pocket*

**Brakes:** The Pocket comes outfitted with the excellent Avid disc brakes. The Pocket definitely has more than enough braking power. The disc brakes on those tiny 16" wheels are somewhat touchy as you gain speed and have to be handled with care.

**Miscellaneous Bits:** The Pocket has custom Catrike CNC hollow aluminum axles that are very trick and a real high-end touch for this affordable trike. They require a simple key tool for removal and installation of the front wheel.

**Details:** The Pocket has just one cable guide braze-on (for a zip tie) for the rear derailleur on the chainstay. I had to use a few more zip ties to route the front derailleur cable. On the plus side, you won't

have to reset the front derailleur each time you adjust the boom. While old school frame builders accustomed to braze-ons may not like this, Catrike's simple cable routing works perfectly. We're seeing zip ties used more and more with modern aluminum frames.

## HOW TO BUY

Catrikes are sold through dealers, or direct from the manufacturer. We strongly suggest that you have a bike mechanic with recumbent trike experience set up your trike.

**Comparable Models:** You have to credit Catrike's Paulo Camasmie for basically inventing his own market. He saw that recumbent trikes were complicated, difficult to buy and expensive, and he changed all this. The Pocket is an extremely simple trike that is of excellent quality and is the most affordable lightweight enthusiast trike on the market. Potential buyers should ask themselves whether they should be upgrading to the more enthusiast Road and Speed models, both of which are more suitable for a wider range of rider sizes and types of riding. As far as price competition goes, the WizWheelz TerraTrike 3.6 is an equally good buy for a more stable feeling recreational/sport touring trike. ICE and Greenspeed more expensive micro- and compact-trikes that. WizWheelz offers fine trikes, but they are more touring-oriented (20" wheels, bigger, longer and wider).

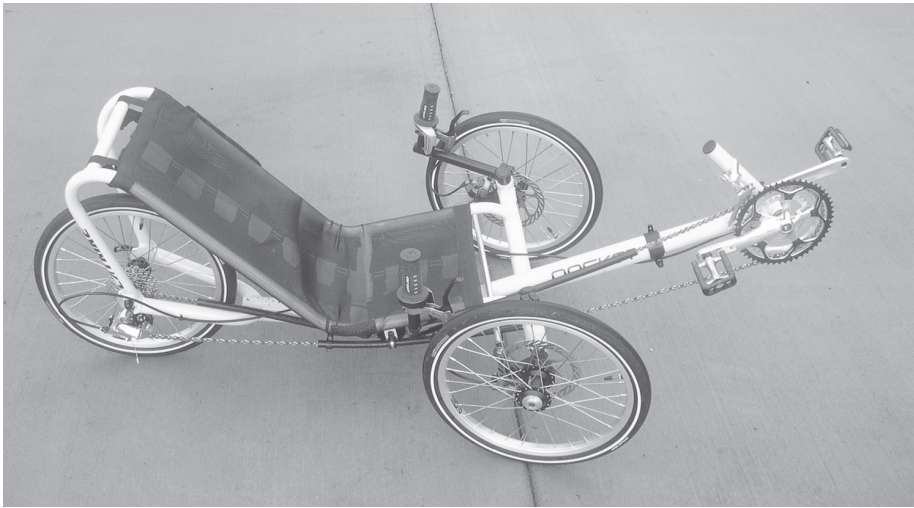
## EXTRAS

The trike comes with a safety flag. A custom Catrike rear cargo rack and head rest are optional. A Catrike fender set will eventually be available. For now, Catrike says Sun EZ-3 fenders will fit. A rear fender or giant mud flap could be mounted between the seat and rear wheel (using coroplast plastic cardboard from the craft supply or sign shop, or a foam workout mat from Wal-Mart). A compact Mueller XT fairing should fit the Pocket.

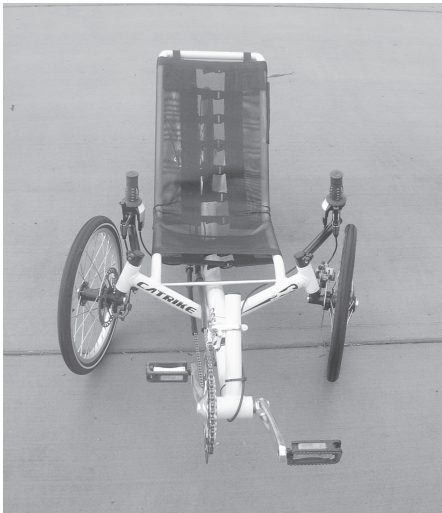
In keeping with the light weight spirit of Catrikes, it would be great to find some equally lightweight cargo carrying options. I'd like to find a small bag that straps onto the frame to carry my tool kit, a spare tube, my wallet and keys. Catrike says that some customers have strapped small bags behind the headrest. They also said a line of Catrike bags is coming.

## SAFETY

This is always a concern, especially on a low trike. I talked to Paulo about his low trikes. He knows that some more serious riders commute on them. Having the necessary skills, making eye contact, riding safely, planning your route, and wearing reflective gear are very important, but we both agreed that being extra careful because you are so low is



Our Catrike Pocket



Note the simple direct steering

even more important.

## COMPANY

Paulo Camasmie's Big Cat HPV, makers of Catrike trikes, has grown by leaps and bounds over the last few years. The line has been a bit changeable, but 2005 will see models, component selection and pricing stabilize with the three current models, the Pocket, Road and Speed. Catrikes are best known for excellent value, light weight and very responsive handling. They've developed a very loyal customer and dealer base that is unequalled in North America at this time.

## VERDICT

The buzz words of lightweight and aluminum frame have really hit the sweet spot among Catrike customers. Catrike has changed all of the rules by offering such lightweight trikes. Catrikes are ten or more pounds lighter than their steel competitors. Even if you carry several pounds in gear, your starting weight is much lower.


Weight is not everything. The Pocket is a quick handling and rigid riding trike and may

not be the best choice for all riders. It is a very short, narrow and responsive trike. And one *not* designed for high speed stability. Riders of average build and larger, and more serious road riders, commuters and tourists will be better suited to the Catrike Road or Speed models. Don't buy this trike because it is light weight. Buy it because it fits you, you like riding it or you need a very compact trike.

We had two minor issues with our Catrike Pocket. Our trike arrived with a warped Avid disc rotor. These can be tricky to true. I couldn't find one locally. Catrike shipped a replacement the same day. Another minor issue was a shipping scratch (1" x 1/2"). Catrike offered to replace the frame, but I declined. This is what I call great service.

The Pocket is a great deal at \$1,500, and this price may not last long. The Pocket will be upgraded to include headset kingpins and a full heat-treated frame midseason and the price will certainly increase sometime later this Summer.

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The Pocket's light weight and tiny footprint make for an amazingly fun ride. It was by far the most popular test trike with my kids for racing around the neighborhood, and the feedback I've read on the web is so far all good. The Pocket is an affordable, lightweight and compact trike for zooming down your local bike trails. It works especially well for smaller riders. Catrike fulfills a unique niche with this new trike and we're happy to see them do so. The excitement surrounding this brand just keeps coming. ♦

## FOR

- Very Lightweight
- Quick & responsive
- Good specs
- Excellent value
- Easy to own, haul and store

## AGAINST

- Quick handling
- Powerful brakes
- Geared low
- Small for some riders
- Somewhat nervous high speed manners

## MORE INFO

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

## NUMBERS

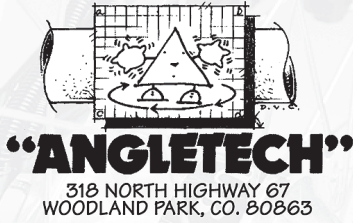
Wheelbase: 33"  
Seat height: 8"  
Crank height: 15.5"  
Track width: 26"  
Overall width: 29"  
Seat angle: 45°  
Weight: 27 lbs. without pedals  
Weight limit: 250 lbs.  
Gears: 24-speed  
Gear-Inch Range: 17.7-78  
Turning circle: 13'9"  
Frame: TIG aluminum, w/heat treated boom  
Color: Yellow powdercoat  
Handlebars: Heat-treated aluminum  
Seat: Integrated frame, mesh cover  
Sizes: One, fits to 45" x-seam

## SPECS

Crankset: Truvativ Touro 30/42/52 170 mm  
Bottom Bracket: New Power ISIS  
Cassette: Sram 11-28 8-spd.  
Derailleurs: Shimano Sora  
Chain: SRAM PC-58 with master link  
Shifters: SRAM MRX twist  
Headset/s: Polymer bushings  
Brakes/levers: Avid 5 mechanical disc  
Wheels: 349 mm 16"  
Hub (front): Catrike 20mm front  
Hub (rear): Deore  
Rims: Alloy  
Tires: Primo Comet Kevlar 16" x 1.35"  
Pedals: Platform  
Steering: Direct bars attached to kingpin assembly

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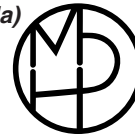
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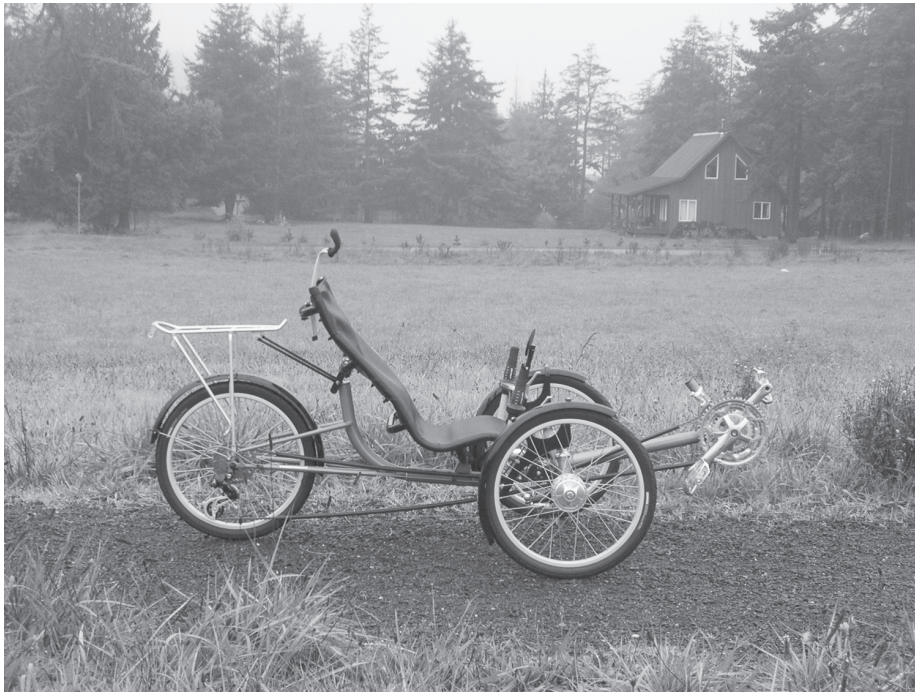


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## RCN Road Test: The ICE T

By Bob Bryant  
[bob@recumbencyclistnews.com](mailto:bob@recumbencyclistnews.com)

*"The Ice T is a great new touring trike. Its frame is based on the world-renowned Trice Explorer, the most popular Trike in the ICE stable. The T shares the same high seat as the Trice Explorer, making it easy to get on and off. T stands for Tour and this trike is an excellent choice for cruising along your favorite trails. This machine maneuvers easily and is beautifully comfortable on uneven pavement. It is very unlikely you will have ever ridden in such comfort, and this machine will put a smile on your face. The super-breathable mesh seat has lumbar and shoulder support to provide day-long comfort. This seat gives great support to your back and the angle adjustment of the seat ensures your neck and spine will not feel the strain of a long day's cycling." — ICE*

**TRIKE:** T

**BUILDER:** ICE

**ORIGIN:** UK

**STYLE:** Tadpole USS

**USE:** Recreation, touring

**PRICE:** £1,276

*Includes shipping to the USA, tax and duty. Dealer prices may vary.*

Inspired Cycle Engineering has a 20-year history of building tadpole trikes. The first trike I ever rode back around 1988 was a Peter Ross Trice. The company later became ICE, for Inspired Cycle Engineering. ICE's specialty is in high end performance and touring tadpole trikes. For 2005, ICE has brought out several new budget trike models:

The T, or Tour, is a 3x20" trike with a mesh seat that is derived from the Explorer touring model.

The Q, for Quick, is a 3x20" trike derived

from the XL performance model, has a mesh seat, and is available in standard and NT (narrow track) versions.

The S, for Sport, is a 3x20" trike based on the XXL model and has a hard-shell seat.

The L, is a small rider 18"/20" trike derived from the Pixie.

For this article, we're reviewing the T, which has a taller seat with a lower bottom bracket for commuting and light touring.

### USE/UTILITY

Like the ICE Explorer, the Ice T is the workaday trike of the line. It is capable of most anything. Those wanting to cross continents may want to go with a more dedicated expedition trike with higher-end componentry.

### COMFORT

The T has a wonderfully comfortable full mesh seat with an three-position adjustable

recline angle. We changed from the most laid back to the middle position without needing to extend the frame.

The T has a fairly upright seating position with a crank height that is just 2.5" above the seat. The ergonomics of the bike are user-friendly and great for new riders or tourists.

### RIDE

The T is not an aggressive trike in ride or performance. It is a great trike for commuting or touring. The ride is a bit smoother than aluminum but surprisingly rode roughly over my town's poorly surfaced roads. I'm not sure whether this is due to the tires, the frame design, stiffness or what, but the T has a rougher ride than our WizWheelz TerraTrike 3.6.

The T has steady and predictable road manners, similar to the Explorer we reviewed in 2003. It has a taller with a more upright seat. When riding the T, there is no doubt about it that you're riding a trike with a refined steering geometry. The steering is smooth and capable.

ICE is known for exceptional handling trikes and the T lives up to their reputation.

**Performance:** If there is an aspect of the T that suffers, it is the performance. The T just seemed to require more effort to propel than some of the other trikes I've been testing lately.

**Climbing:** The T is a slow but steady climber. Balance is a non-issue so you just lean back and spin up the hills. The T has the low gearing to climb just about any hill. The only detractor would be the weight of a well-equipped T.

### FRAME

Just like our ICE Explorer and the other 25 models they make, the T is hand-brazed from Columbus T45 CroMoly steel. The trike uses custom ICE lug joints at the chain stay/mainframe, seat stay/mainframe and cross-member/mainframe joints. This makes production easier for ICE and looks great.

The ICE budget frames are built in batches to make production simpler and faster. One such detail is the rear triangle with its curved shape, and another is simplified cable routing.

The frame comes in four sections: rear triangle, cross-member, boom and seat. The frame sections double-clamp bolt together and the frame sections are sleeved. The seat clamps to the frame with four small nylon clamps.

The seat recline adjustment consists of three positions and requires the removal of a bolt. It's not the easiest recline adjuster, nor does it offer an infinite adjustment range; just three positions. It is possible that the a seat recline adjustment may require the frame to be extended, though we didn't experience this. Extending the frame (or the front boom) will require resetting the derailleur cable lengths, so this is a one-rider bike that you would not want

to adjust for other riders too often.

**Steering:** A pivot just forward of the seat connects to two “L” shaped side-sticks and rotates so that you can find your own personal sweet spot. ICE’s trademark is a near perfect no-pedal steer steering geometry. It is one of the best in the industry.

The kingpins rotator on headsets, which makes steering the trike fluid and graceful. I prefer kingpin headsets to bushings.

**Finish:** The T comes in a creamy medium blue powdercoat.

**Weight:** At 40.6 pounds (with rack, rear fender, mirror and pedals), the trike is still a bit heavy. Our WizWheelz TT 3.6 weighs 40.3 lbs. with a rack, full fender seat, flag and pedals. A similarly equipped Catrike Road would weigh under 33 pounds.

## COMPONENTS

The component selection has changed already since our early 2005 T was delivered. Production models from here on out will be equipped with a Truvatic Touro triple crankset with optional smaller inside (26-tooth) and larger outside (55-tooth) wider gearing options. Derailleurs are now Shimano Deore and the trike is a 9/27-speed (ours is an 8/24 speed).

**Gearing:** The stock gearing is a bit on the low side at 17-92 gear-inches. An optional 55-tooth outside chainring (\$28 upgrade) and a 28-tooth inside chainring can widen the gear range to 15-97.5 gear-inches, which would be even better. A touring/ commuter trike like this really doesn’t need a top gear any higher than 100 gear-inches.

With the T’s 20” drive wheel and lower-g geared triple crank, I’m shifting more than usual. On most recumbents I manage to stay in my middle chainring for most riding, using the big chainring for down hills and fast flat road sections. With the T, I only used the small chainring (extreme low gears) once on the steepest hill in town and rode mostly in the large chainring. So in normal acceleration from a stop light I had to start out in the middle chainring and shift through the gears and end up in the high gear.

**Chain Management:** The T and Q come outfitted with an integrated larger-diameter chain idler and chain tube set. Part of the assembly process involves cutting the tubes to the correct length. Also involved is setting the chain to the ideal length for the rider. This is a hassle, but you should only have to do it once.

*“Sturmey-Archer drum brakes have proven to be very reliable. They are low maintenance — we have never sold a set of replacement brake shoes to anyone! The braking power available from them is very good.” — ICE*

**Braking:** The T uses dual front Sturmey-Archer drum brakes. These have been the mainstay of the recumbent trike industry for



*Note the straight cross-member, high seat and relatively low bottom bracket*



*ICE T forward frame section*



*Seat back and recline adjustment*



*ICE T controls*

years. They are simple, easy to adjust and the pads last a long time. They are just like miniature motorcycle or car drums, but have finely machined petite aluminum hubs.

The dual drum brakes are velvety smooth, quiet and offer excellent braking power. There are two brakes on this trike, a front right and left. The right handle connects to the right brake, and left to left. There is very minimal brake steer — a very refined system.

The T also has parking brakes on both front brake/handles. You just pull the brake handle tight and pop the spring-loaded button. A parking brake is essential to any three-wheeled recumbent. There are no plans to offer disc brakes on the T or the Q.

**Wheels:** The rear wheel has a Deore hub and is machine-built in Taiwan. The front wheels have Sturmey-Archer drum brake hubs and are built in the UK. The wheels have a single wall Jet Set silver anodized 20” (406) single wall alloy rim with 36 spokes each. I had never heard of this brand of wheel, but ICE tells me that it was chosen for its simplicity and durability. As I noted in RCN 086 (Season Preview; Components), custom wheels can be very expensive.

The only marginal component on this trike is the SRAM MRX Pro shifters. These twist grips shift and work well. We’ve had zero problems. We’re just a bit shy about lower line SRAM shifters due to two different failures this past season. ICE will ship the T or Q with Shimano a bar-end shifters kit (\$70) that you install. We highly recommend this option.

## HOW TO BUY

ICE has 25 models and it is difficult to choose one. The line is overwhelming and selecting a model that will best work for you is confusing. Another problem is that they only have ten or so dealers in the US, so finding a trike to test ride will be difficult for most folks.

Prices quoted at the website include shipping to the USA. Set up seems overwhelming at first, but the instruction book is excellent and our T went together smoothly. If you live near a dealer, we still recommend having an expert assemble the trike for you. Assembly was easier than a Catrike, but much more difficult than the WizWheelz TerraTrike that ships almost ready to ride.

**Comparable Models:** If you are looking at entry level commuting/touring trikes of this price range, there are many to choose from: the Catrike Pocket (\$1500) and Road (\$2350); The WizWheelz TerraTrike 3.6 (\$1,899) and the Greenspeed GT-3 (\$2,595) and GT-5 (\$2,995) that fold nicely and have 16” wheels.

## EXTRAS

The T comes with a rear rack, rear fender, a rearview mirror and a safety flag. The front fenders are optional and mount to the top of the headset kingpins.



Note the optional rack, fenders, mirror and headrest

**Fairing:** It is debatable whether trikes need front fairings, but if you want one, Windwrap offers a small fairing that is made for highracers and tadpole trikes.

## COMPANY

Peter Ross Trice trikes have been around since 1986 and this was the first trike I ever rode back in 1988. ICE was formed in 1998 by Chris Parker and Neil Selwood — who took over the manufacture of the Trice from Peter Ross.

## VERDICT

ICE is one of the most respected companies in the business. Just after we completed our time with the T, ICE announced new lower pricing for their budget line trikes. As of February 17, 2005, the cost is \$2,415 for a new T or Q, which is a very good price that makes the ICE trikes more competitive with the other entry level trikes from WizWheelz, Catrike and

Greenspeed. Keep in mind that these prices change frequently due to the exchange rate. Check [www.xe.com](http://www.xe.com) for the current rate.

The T's CroMoly frame is robust and tough. Steel also offers a more compliant ride, and should be less jarring than aluminum. The four-section frame is rather ingenious and saves on shipping and makes it easier to travel with, but also adds complexity.

One of the ways ICE makes the frame easier to build is by simplifying the front derailleur cable routing. When you adjust the boom with this system, you'll need to reset the front derailleur cable, and possibly the chain length.

To be honest, I just didn't *click* with the T as much as I did with the earlier Explorer. I've been mainly riding trikes on my own time, and I now prefer something a bit sportier and more nimble. If given the chance to do it again, I'd opt for an ICE Q.

ICE has made the budget line trikes simpler, more standardized and easier to build.

This new plan is a great deal for trike enthusiasts and the recent price reduction is just the icing on the cake.

When you buy an ICE trike, you can be certain that you're getting a trike from one of the top recumbent manufacturers. The T rides like a refined tadpole from a world renowned builder. It does exactly what it was designed to do at the price point it was designed to sell for. With ICE's five new budget models, you can choose the model that has the attributes you want. ♦

## FOR

- ICE Craftsmanship
- Columbus CroMoly frame
- A new lower price (Jan. 2005)
- Comfortable mesh seat & ergonomics
- ICE quality and reputation

## AGAINST

- Heavier than competitors' models
- Low bottom bracket (too low?)
- Mediocre MRX Pro shifters & Acera derailleur
- Drum brakes (we liked them, but the competition has discs)

## MORE INFO

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

## NUMBERS

Wheelbase: 39.4"  
 Seat height: 12.5"  
 Crank height: 15"  
 Seat angle: 42°-49°  
 Weight: 40.9 lbs.  
 Weight limit: NA  
 Gears: 27  
 Gear-Inch Range: 17.2-92.2

## FRAME

Frame: Brazed welded T45 & Columbus CroMo  
 Color: Sky Blue powdercoat  
 Handlebars: ICE USS  
 Seat: ICE aluminum  
 Sizes: One

## SPECS

Crankset: Truvativ (ours had a Shimano Tiagra 30/42/52)  
 (optional 26-T inner and 55-T outer)  
 Bottom Bracket: Shimano UN25  
 Cassette: Shimano 11-34 9-spd.  
 Derailleur (front): Shimano Tiagra  
 Derailleur (rear): Shimano Deore  
 Chain: SRAM  
 Shifters: SRAM MRX Pro twist grip  
 Headsets: Chin Hauer roller bearing  
 Brakes/levers: Sturmey Archer drum  
 Wheels: 406 mm 20"  
 Hubs: NA  
 Rims: Alloy single wall  
 Tires: Kenda Kwest 1.5 100 psi

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## Recumbent Tour

# 9-Ferries Tour

By Chet Rideout  
[chetride@msn.com](mailto:chetride@msn.com)

I asked my wife, Lynn, "Do you think we can get the hang of this retirement business?"

In June of 2004, when I was 60 and my wife was 58, we made two major life shifts when I retired from teaching high school and we moved from the Colorado front range to Port Townsend, WA. Earlier vacations to the Pacific Coast attracted my wife and me to the ocean, and my retirement led us to seek new horizons, including sea kayaking. We experienced an adventure in moving with a 25-foot Penske truck, and after getting settled into the smaller house on the Olympic Peninsula, we prepared to take a bike tour of Vancouver Island and the Sunshine Coast.

My biking companions, Piero Tassinari, 53, and Ken McKee, 48, neither of whom is planning retirement soon, expressed interest. I mapped out the tour, replete with ferries, north along Vancouver Island's eastern shore, and south along the Sunshine Coast of British Columbia and the city of Vancouver. Although ferry fares can be quite pricey, by bicycle they are only slightly higher than for a foot passenger, making this a viable (and affordable) plan. Lynn and I were both riding LWB recumbents: mine a 2000 R40 Vision with underseat steering pulling a two-wheeled Quik-Pak trailer; hers a 1980s RANS Stratus with a BOB trailer. Piero also pulled a BOB with his 1995 SWB

Speed Ross, while Ken rode his trusty Specialized Rock Hopper mountain bike with front and rear panniers. The bikes all had triple chainrings, and ranged from 18 to 27 gears. The recumbents were long on comfort, but were slower climbing the hills. On flats and downhills we were evenly matched. At the end of June we embarked from Port Townsend to the sound of foghorns from nearby ships. The morning mists lifted by the time we reached Highway 20 out of town. Although this highway lacks a shoulder for much of its length, the westerly direction is by far the best. Luckily, traffic volumes were low that morning. On Highway 101 to Sequim we looked in vain for a breakfast place. Piero had problems even getting his boxed bike to Seattle, and now the chain was rubbing badly on the front derailleur. We solved both the food and mechanical problems in Sequim.

I had heard of the Olympic Discovery Trail from Sequim to Port Angeles, and quizzed Mike, of Mike's Bikes, as to its suitability for touring. With his enthusiastic endorsement we rolled over to the trailhead. We greatly enjoyed the first half of the trail, a level stretch of packed gravel along which we stopped frequently for blackberries. This led, however, to stream crossings, featuring precipitous drops to small bridges and ruinous climbs back up. After three of these excursions we abandoned

the trail and rolled into Port Angeles on the highway.

Here we waited for the M.V. Coho, the first ferry of our tour. This privately-run ferry took us to Vancouver Island. We enjoyed a beautiful sunny day in the 70's, one of many each summer in the Pacific Northwest. We rolled the bikes on board and fastened them to bike racks on the bow. Here we had some explaining to do, since we were wearing some catchy helmet covers I bought for the team for our *12,000 Feet and Climbing* tour in 2002 (*Recumbent and Tandem Rider Magazine*, Sept. 2002). Unfortunately, I've since lost the reference to the company in New York that made them. If you recognize them and know the source, please send me an email.

After a 95-minute crossing of the Strait of Juan de Fuca, we came into Victoria's busy harbor where we saw kayakers, sightseeing boats, and sea planes galore. I had made reservations at Maketa's bed and breakfast in downtown Victoria. After checking in and storing the bikes we strolled along the waterfront and had a fantastic seafood dinner. Victoria is a delightful town, featuring museums, Victorian houses, breathtaking ocean views, horse drawn carriages, many bed and breakfasts, and top choices for dining and imbibing. It is also known worldwide for the incomparable Butchart Gardens.

After a great breakfast we shopped by bike, then loaded our trailers and panniers for the trip north. Our chosen route was the Galloping Goose Trail. This follows the railbed of the gas-powered rail car of the same name that carried passengers in the 1920's. The trail alternated from paved to well-packed gravel, and also followed Lochside Drive on the east coast of the Saanich Peninsula. We found it very good riding to Swartz Bay, where we waited for the tiny ferry to Saltspring Island.

My plan was to use Saltspring Island to free us from using busy highway 1; we would camp two nights on the island and take the northern ferry back to the mainland at Crofton. So much for the best laid plans of mice and men! Saltspring, it turns out, is a mountainous island with very few flat surfaces. On Beaver Point Road we suffered a seemingly endless series of nasty 8-10% climbs, and my wife nearly quit in mutiny. We finally rolled down into Ruckle Park, feeling quite worn down after only 28 miles for the day. Luckily this park is an enchanting place, with fantastic views of other islands and passing ferries.

That evening I talked to park personnel about our route, and found that Stewart Road offered much less climbing on the way to the main town of Ganges. In the morning we only got about two miles from the park when a bolt sheared in the hitch of my Quik-Pak Trailer, thereby disconnecting it from the bike. It was Thursday but also Canada Day, the equivalent





Mr. Fix It's shop

of our Fourth of July, so this looked like trouble. A park ranger stopped and said he would check with someone who could help. When he returned, I loaded my bike and trailer in his pickup, and he drove about half a mile to a small log cabin on a dirt road, with my partners in pursuit on their bikes. Here we met Dave Beck, better known as Mr. Fix-it. After Dave made and consumed a few cups of coffee, he attacked the problem. His cabin has no electricity or phone, so I was concerned that we might not find a solution here, but we enjoyed waiting on the sunny lawn surrounded by tall trees. It was a long operation, but Dave replaced the 1/4" bolt with a 3/8" threaded rod, and the final result appears bombproof. (Ray Quick of Quik-Pak later informed me that his newer trailers have upgraded bolts.)

After settling with Dave and saying our goodbyes we rolled on for a pretty ride past farms and fruit signs to the town of Ganges. In town a Canadian folksinger named Valdy was drawing a huge crowd, and people gawked at vintage autos. We found a campground and went to the festivities that night. The festival featured camp dancing, folk singing, and local humor. Quite a fine combination.

The next morning we took down our tents in the rain, and biked into town for a breakfast at the Treehouse Restaurant. Lynn was excited by the Jill Louise Campbell art studio nearby, with watercolor and oil paintings of local scenes and of Tuscany. I was a little lacking in rain gear and warm clothes, but the people in the nearby shops were a great help. After about three miles in the rain, we caught the Vesuvius Ferry back to Vancouver Island. The clouds lifted, and we took a secondary road north to Chemainus. This logging town has its history proudly recorded on murals painted on city buildings, and after a brief visit we rejoined



(Left to right) Ken, Lynn, Piero and Chet the ferry dock on Port Angeles, WA.

Highway 1A to roll north toward Nanaimo. Here the traffic was frantic and the rain began again with a vengeance. Finally we turned off and stayed for the night at Living Forest Campground.

The next day my shifting system gave up the ghost in Nanaimo, and we tried every bike store in town to find a solution. I was limping along in two gears pulling a loaded trailer, and I was not a happy camper. The first two shops declared that they couldn't possibly fix a recumbent, and that working on my bike would spoil their whole day. Finally I had success at Bastion Cycle and Ski, where they helped me out despite their busy repair schedule. After replacing my rapidfire shifter and brake assemblies as well as associated cables, and simultaneously lightening my wallet, everything ran like a top. We continued for a pretty long ride, but we were finally off the main highway and enjoyed views of nearby Denman Island. We finally found camping at Qualicum Bay Resort and caught up on laundry duty.

On the following day the weather finally cleared. After a sausage and egg breakfast over our portable stove we embarked. With the day's only problem being a flat on Ken's bike, we enjoyed a sunny ride along the sea, and Lynn got a chance to swim the warm salty waters. In this general region, the midsection of Vancouver Island along the Inside Passage, the waters tend to be warmer due to tides entering from both directions. Just before Comox we reached a long steady 8% climb, finally coasting down to the ferry. Here, as on all Canadian ferries the cyclists get on and off first. These ferries that cross the Strait of Georgia are big, hauling up to 200 cars, and they are equipped with exceptional buffet-style restaurants. As you dine you gaze out at outstanding ocean views. We were definitely traveling first class on a budget!

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In Powell River I had reserved a campsite at Willingdon Beach Campground, which was a lucky thing, since it was crowded with a high school music festival. Our campsite was 100 yards from the swimming beach, and dining choices were a few short blocks away. Ken and Piero biked north to Lund, the official end of Highway 1, while Lynn and I took it easy, planning a burrito dinner and visiting the local bike shop. All of us campers were accosted upon leaving or returning to the campground during our stay. A baby crow had fallen from its nest by the gate so all people passing that point were dive-bombed by the irate parents, providing quite a surprising reception. Since this was near our tent we had ringside seats to watch people's reactions.

Our goal the next day was to bike to Ken's sister's place on the lower Sunshine Coast. This was perhaps our toughest day, with many hills on the way to Langdale. We found the lower coast just as hilly, but enjoyed a stop at the Ruby Lake Resort. The proprietor, Georgio Cogrossi, was a very jolly Italian immigrant, and he broke enthusiastically into song with Piero. While they compared notes, Lynn and I swam in the lake, which is amazingly clear and clean.

We continued south, and after 47 hilly miles we arrived at John and Bev's house. We were thrilled with their patio which overlooked an astonishing ocean bay. The next day we did some shopping in nearby Sechelt, and then paddled around in John's sea kayaks. This was an opportunity for Ken to teach Piero how to kayak for the boating adventure we had planned after our return to Port Townsend. In the bay we saw bald eagles and osprey, as well as seals and sea otters. One rest day stretched into two, and we hiked to see nearby Smuggler's Cove.

We reluctantly tore ourselves away from John and Bev's great hospitality, and rode south in heavy traffic, turning off onto quieter but hillier roads after Roberts Creek Park. For lunch we stopped at the Gumboot Café. This was like a step back into the 70's, complete with super food and local flower children; truly a fantastic place.



*Lynn rides in Stanley Park, Vancouver, BC, Canada*



*(Left to right) Chet, Ken, Piero & Lynn*



*BC Canada ferries*

We headed into Gibsons, and discovered a super bike store there. We shopped for odds and ends, most notably a fatter 20" front tire for Piero's bike. We rode past the ferry for about three miles of continuous climb to Langdale Heights Campground. We found it expensive but well organized. We particularly liked being able to camp in the pavilion out of the weather.

The next morning we coasted down to the ferry to Horseshoe Bay. I had originally planned to next take the ferry from Horseshoe

Bay to Nanaimo and then head south to Sidney, but we had found the routes south of Nanaimo, including Saltspring Island, to be suboptimal. Ken planned a route south through the city of Vancouver down to Tsawwassen, where we could take a ferry to Swartz Bay, as a result.

We took scenic Marine Drive from the Ferry around the coast, then followed a bike trail and crossed the Lion's Gate Bridge into Vancouver. Entering Stanley Park, we dropped down to the Sea Wall Trail, a beautiful route along the ocean. Crossing Burrard Bridge, we lunched on Granville Island, enjoying outdoor music and dancing performances.

Ken then guided us unerringly along a number of routes in Vancouver, and even had a solution for our last challenge. The highway to Tsawwassen passes through a tunnel which is closed to bikes. About a quarter mile before the tunnel, however, an east Indian in a turban waits for bicyclists with his van and trailer, a service financed by the city. In no time we were loaded and transported carefully to a gas station on the far side of the tunnel. We hurried on to the ferry terminal, rolling in just in time for the 5:00 ferry to Swartz Bay.

The Queen of Tsawwassen is one of the largest ferries in the Canadian fleet, with a fantastic restaurant on board. We were enjoying our supper when the captain announced that a large pod of killer whales was off the starboard side of the ship. We rushed to the windows and were thrilled at the sight of perhaps two dozen Orcas in four groups. Their tall dorsal fins were striking, and as they rolled their white bellies were exposed. On his cell phone Piero breathlessly told an Italian friend about the sight we were seeing. His friend then jealously retorted, "You are a sack of \*\*\*\*!" This ferry ride is the most scenic I have seen, since it winds through the Gulf Islands off the coast of Vancouver Island. We had great views of Galiano Island, and then we spotted Ruckle Park on Saltspring where we had spent our second night.


We arrived in Swartz Bay in the pouring rain, but it let up a bit after twenty minutes, and we started riding. We retraced our route along the Lochside Trail to Sidney, and checked into the Best Western Motel, which



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had inside storage for the bikes, and, just as importantly, a hot tub. After a one-hour soak and a few beers, we retired to our rooms and quickly fell into an unconscious state.

Next day's ferry from did not leave until 11:40, so we used the hot tub again and enjoyed a leisurely breakfast. This U.S. ferry threaded the needle again, in this case through the San Juan Islands. We rode nonstop to Anacortes on Fidalgo Island, and headed south. The Sunday traffic was heavy, and at the scenic Deception Island Bridge I was worried about our safety. Luckily, a van driver was willing to follow behind us on the bridge, so we passed without incident over to Whidbey Island.

This is a super biking island, but again traffic was heavy until we turned off on Madrona Way after working our way through Oak Harbor. This winding ocean drive passes bays, quaint sea-view homes, and hundreds of the red-barked Madrona trees. We entered Coupeville, where we ordered a pizza dinner. After a five-mile ride we had a one-hour wait for the Keystone ferry to Port Townsend, followed by climbing another three miles in the dark to our house. Bike lights and flashers helped us find our way.

When we got to our house my logbook showed our biking adventures included 480 hilly miles of biking, as well as nine spectacular ferry rides! The next morning Ken announced that he had to head right home and abandon our kayaking plans; Edmonton had experienced a very heavy hail storm and his girl friend was having trouble coping with the resulting floods. We were sorry he couldn't join us in our upcoming kayak expedition, but we understood the magnitude of his problem. After a five-day, forty-mile sea kayak expedition, Piero departed SeaTac Airport for his long flight home to Italy.

What about Lynn and me? Well, we decided that maybe this retirement deal would work out after all. Without further ado we sat down with a glass of wine and planned a September bike tour to the San Juan Islands. ♦



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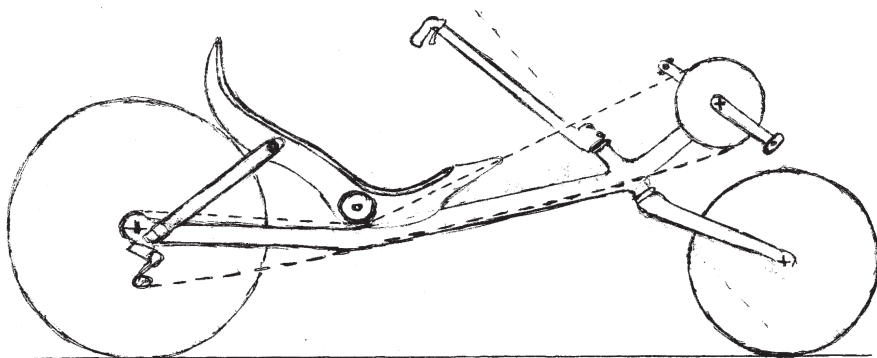


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## My Bike: A Long Wheelbase Mid-Racer

By Charles Brown

I've been working on designing bikes that serve as comfortable commuters, yet are fast and fun. They seemed to be improving nicely over the years — until I entered a recumbent race with my friend, Jay Hoover, and ended up mid-pack in the unfaired class! This is the worst I've ever done in unfaired HPV (Human Powered Vehicle) racing, and something had to be done about it. All of the hot rods in that race had real laid-back seats, so I started slapping together and modifying experimental laid-back seats on my test bikes.

Lowracers seem to be the fastest of the unfaired bikes. However, I worry about the safety of lowracers on the road, because motorists who can see curbs and lines on the road just fine seem to develop a blind spot when it comes to bicycles three feet taller than this.

Highracers seem just a tick slower on the track, though I suspect they might be faster in the real world. These seem too high up to me — it's a long way to fall, and the high bottom bracket (BB) can make it hard to get started from a stop, especially up hill.

For my next test bike, I used the aerodynamic rider position of those two types of bikes, but set the rider height part way between the two. I built mine as a long wheelbase (LWB) because, well, I like them. There's nothing better for a long ride. In the past I've built several LWBs with low head tube angles and direct steering, using lightweight, high performance 16" front wheels. After a lot of messing with that fork rake and handlebars, I've come to the conclusion that these just don't track as steadily as 20" wheels. Not that it's unsafe; you just have to pay a little more attention to keep the thing pointed where you want it to go.

LWBs tend to have a problem with the front wheel slipping out when a patch of sand or gravel jumps in front of you unexpectedly. The mid-racer layout, with its higher BB, allows the front wheel to be moved farther back so you can load more weight on it. It then does a better job of staying put.

With these laid-back seats, some writers have suggested starting out with them set more upright, then gradually adjusting them back as you get used to the position. I couldn't agree more! It's taking me quite a while to get used to it.

Some years ago, RCN's Bob Bryant, suggested that a laid back seat might reduce "recumbent butt." (Placing more weight on your back in the more reclined position places less weight on your butt.) This certainly seems to

be the case.

The larger seat surface area seems to increase comfort. Mine is made of plywood with 1/2" Styrofoam on top, with a piece of vinyl over that, and it's quite comfortable. These seats make it impossible to turn around and see behind you, so a rearview mirror is necessary.

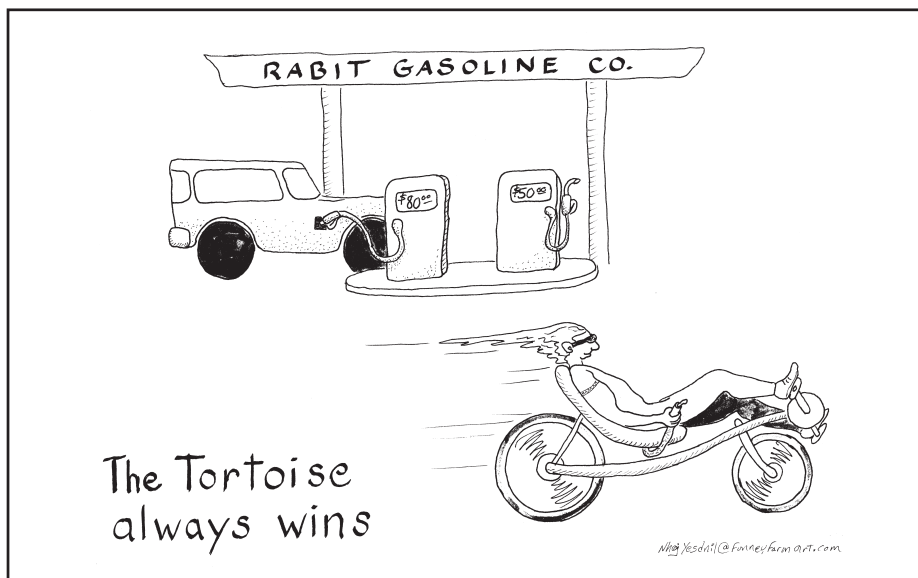
I like narrower handlebars because, when done right, they permit better one-handed steering for signaling turns, carrying stuff, etc. When combined with shallow steering angles, mine seems to work better with less trail (Trail is the horizontal distance between the center of the tire contact patch on the ground and the intersection of the steering axis with the ground.) than you'd use with wider handlebars.

Watch out for front wheel/pedal interference! With the laid-back steering angle and long wheelbase, the front wheel swings around quite a bit.

One of my favorite features of this bike is that it is easier to control when it starts to skid as compared with your average production LWB recumbent. This is a subject I've studied a lot. If you are using 406 mm 20" front and 700c rear wheels, my recommendation would be to try to design 40% of the weight on the front wheel, and make the front tire significantly narrower than the rear.

My other favorite attribute of this bike is speed. On my old commuter recumbent, which is no slouch, it took me 23 minutes to get 6.5 miles to work. With the new bike it takes a consistent 21 minutes with the same effort. That's 8% faster, with stops and all! It must be 10-12% faster on the straight-away.

I think this is a really good design and I invite homebuilders and manufacturers to use what they can from it. Imagine the speed of a lowracer combined with the steadiness and ride of a long-wheelbase! Mine is a lot of fun to ride. ♦



Letters continued from page 7

### OTHER RECUMBENT MAGS

Can you recommend any other recumbent magazines?

Terry Wilson

**Editor Comments:** The other magazines that cover recumbents are:

Velovision ([www.velovision.co.uk](http://www.velovision.co.uk)): This print magazine from the UK covers folders, recumbents and workbikes in stunning glossy color.

Recumbent & Tandem Rider ([www.rtrmag.com](http://www.rtrmag.com)): This print magazine from the US covers

tandems and recumbents in a very positive style, and is perhaps less critical than RCN.

BentRiderOnline (BROL) ([www.bentrideronline.com](http://www.bentrideronline.com)): Free eZine: Shorter web-style writing, perhaps a bit less critical than RCN. I especially like Bryan Ball's and Larry Varney's reviews. BROL has a very active web-board which is the place to hang out and discuss our favorite bikes on the web.

I read and respect all of these magazines, writers and publishers. ♦

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**Wasco Wild West 75 Mile Recumbent Race**  
May 7 — The Dalles, Oregon  
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Contact: Clay Smith email: [clayrace16@yahoo.com](mailto:clayrace16@yahoo.com) or Tel. 541-296-1314

**Michigan Recumbent Rally East**  
May 7 — Southeast Michigan  
Displays, dealers, test rides. 9am - 3pm, Willow Metropark pool shelter (southeast Michigan area).  
[www.wolverbents.org](http://www.wolverbents.org), [wolverbob@cs.com](mailto:wolverbob@cs.com) or Tel. 734-487-9058

**Michigan HPV Rally**  
June 11-12 — North Detroit  
Time trials, hill-climb/coast-down, practical vehicle, camping. N. Detroit area. [www.mhpva.org](http://www.mhpva.org), [wkiehler@comcast.net](mailto:wkiehler@comcast.net) or 313/884-0109

**Michigan Recumbent Rally Central**  
June 25 — Lansing, Michigan  
Recumbent/hpv gathering. 10am - 3pm.  
[www.wolverbents.org](http://www.wolverbents.org), [wolverbob@cs.com](mailto:wolverbob@cs.com) or 734/487-9058

**Bentrideronline Rally**  
August 26-28 — New York State  
[www.bentrideronline.com](http://www.bentrideronline.com)

**12th Annual Midwest Recumbent Rally**  
August 12-14 — Stevens Point, Michigan  
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**New England Velomobile/HPV Rally**  
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**FOR SALE: RANS STRATUS**, \$700. Tel. 770-445-5031 (GA/089)

**FOR SALE: RYAN VANGUARD LWB USS**. Must Sell due to med.cond. Shimano XT, clipless, panniers, exc. cond., <800 mi. \$2,500 new, asking \$900 OBO, David, 360-373-2336, dlrv1947@yahoo.com (WA/089)

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