



Recumbent Cyclist News

The Recumbent Enthusiasts' Newsletter — Since 1990 — #099 April/May 2007



Is the \$650 Actionbent Jetream a bargain? Read this review and find out, page 14



A Taller Tadpole: The ICE T, see page 10

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Sat'RDay Folding SWB

BIKE: Sat'RDay Tour 406
PRICE: \$3598
CONTACT: www.bikefriday.com

By: Diane Pittman

The Sat'RDay Tour 406 is the long awaited sequel to Bike Friday's folding recumbent now known in Internet circles as the "classic" Sat'RDay. Bike Friday ceased production of the old model last year in preparation this total redesign. I owned a classic for three years and never really made friends with it. I didn't like the upright posture or the webbed back on the seat, and the begging hamster above-seat steering always felt too far away and a little unstable, even with the Terracycle upgrade. The first glimpses of the new Sat'RDay appeared on the web site last summer (a blurry photo purportedly taken by a parrot...) revealing a Euro style hard shell seat, sportier high racer type geometry, and tweener style steering. I was immediately interested. When Bike Friday's Walter Lapschinski called to ask if I wanted to buy a bike from the first production run I couldn't resist. I considered waiting for the bugs to be worked out and buying later (sales

was unrealistically optimistic about lack of issues with a new model, and there was no price break for being a "beta tester") but I decided to be adventurous and rest on Bike Friday's reputation for working with customers and making things right.

USE: I use the Sat'RDay mostly for day trips, light touring, and commuting. The big advantage to all the Bike Friday models is that they fold to fit in small spaces. I have no problem getting mine in the trunk of my Honda Civic and will sometimes park the car and use the bike to run errands when a total bike commute is not feasible. And it packs into an airline regulation size hard sided suitcase! It has been a delight to have my recumbent bike with me on recent trips to Washington DC, Vermont, and Wisconsin.

SEAT & COMFORT: The Sat'RDay features an Optima hard shell carbon seat. The base of the seat has a bracket that fits onto a block that adjusts fore and aft along a rail on the main frame. A quick release allows the front to detach for folding without altering the seat adjustment. The block is also secured with a quick release to allow easy adjustment

Continued on page 6

RECUMBENT CYCLIST NEWS

Recumbent Cyclist News was published by Bob & Marilyn Bryant from 1990-2007, 101 issues. RCN was closed in December of 2007 when it became no longer financially feasible to publish a print newsletter. bryantrj@gmail.com



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by Bob Bryant, Publisher

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We will also reduce the number of RCN issues that we produce in 2007 from six to five: Jan/Feb/Mar RCN 098, April/May RCN 099, June/July RCN 100, Aug/Sept RCN 101, Oct/Nov/Dec RCN 102. The new five issue rate is effective immediately. Subscriptions paid for at the old rate will run for six issues.

ARTICLES/ROAD TESTING

We would really like to get more reader submissions for 2007, whether it be a road test, customization or touring story. These stories can be quite interesting, as we're sure you'll agree after reading the Bike Friday Sat'RDAY review in this issue. Write or email for our writer guidelines and road test template.

We're looking for reviewers for the following bikes: Longbikes, RecumbentUSA.com, GetItBent.com, Actionbent, Ilovebent.com, Sun Tomahawk, Easy Racers Javelin, Sun EZ3 AX, Lightfoot Explorer, Velomobile or Quad and a Cycle Genius LTX. If you happen to own a recumbent that has not been tested in RCN and want to do a review, please contact me. I also have a few 2007 road test slots available if you're a manufacturer or importer.

RCN SPONSORS

We welcome a few new advertisers to RCN. See SpringCreekRecumbents.com, Basically

Bicycles and RickCycles.

We lost a few advertisers for 2007. We're not sure why these manufacturers dropped RCN — the industry's ONLY dedicated print publication. We thank them for their support over these years and hope they find their way back into our fold.

THE FUTURE

We'd like to go back to our roots a bit and liven things up. We plan to be a bit more opinionated and include stories on home-building, components, custom features, used bikes and touring/adventure stories.

We're all about helping readers to learn about comfortable bicycles for real world applications such as recreational riding, commuting, sport and loaded touring. We'll leave the racing, and related banter to those who have a passion for that sort of thing.

Some have asked if we'd offer an online PDF version of RCN. We're taking a poll on this, so if you're interested in reading RCN online/PDF (paid subscription), email us and we'll add your name to the list.

We'd love to give RCN away for free on the web, but so far we haven't figured out how to do it without going broke in the process.

We're always on the lookout for ways to make RCN more sustainable. With the right financial backing, we'd even consider turning RCN into a non-profit organization. The Recumbent Bicycle Club of America (RBCA). If you have any ideas, we'd love to hear them.

Watch for our **100th issue of RCN coming in two months!** Also, be sure to read our "affordable recumbents" essay on page 16. ♦

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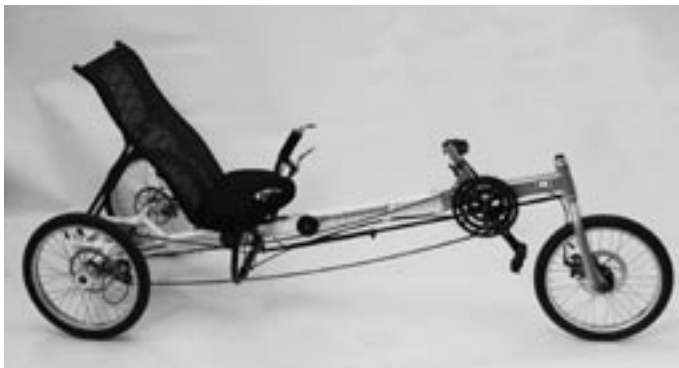
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Recumbent News



This is the Greenspeed "Frog" prototype #5. It has a rectangular steel frame (telescopes for sizing). The weight is about 40 pounds. There will be two models. The base will have Avid disc brakes, 16" Scorchers tires, a Shimano Alivio 24-speed drivetrain and Ultegra Bar End shifters.

ANGLETECH: Has a new online store and cart shopping system, visit: www.angletechcycles.com.

CARFREE— How To Live Well Without Owning a Car: This is the best book I've read on the merits of going carfree. Learn how you can save \$7000-\$10,000 per year. Visit their website and read the sample chapters: www.livecarfree.com.

DAY6 2007: "The 2007 Day6 semi-recumbent bicycles will be here in April. Prices are SL21 \$699 and SS21 \$649. The following upgrades have been made for the 2007 model: 17" seat will mount to a standard seat post allowing forward/rearward and angle adjustments, a grooved seat post will eliminate seat post rotation, a new seat post is 400 mm and 30% stronger than last before, disc brake mounts on the rear, electric kit wire guides are on the frame, new aluminum handlebars, cartridge bottom bracket, double wall CNC rims, rear bridge for mounting fenders. We offer three different electric motors. The Brute electric conversion kit is by Phoenix. It will go 25 mph and pull a trailer up hill without pedaling. We also have the Bionx motors ready to go. Sales have been extremely good and customer response has been fantastic. We have reviews coming soon." www.day6bicycles.com.

ICE 2007: While we have not yet seen these new trikes, we do have a reader review in this issue. For 2007 ICE is offering a new hardshell seat option on the Q, QNT and T models, complete with side bolsters for better road hugging ergonomics. Hydraulic brakes are also a new option. The S model has been discontinued, and somewhat replaced by the QNT hardshell model. For more info, check out: www.ice.hpv.co.uk.

RAAM 2007: Bent Up Cycles is sponsoring a RAAM team. www.bentupcycles.com or link from our February blog archives.

RICKSYCLE: "Finally a tandem social that you can travel with. The Ricksycle, with its modular components can be broken down to fit into the back of a minivan, suv, or wagon with ease. This Delta trikes' aluminum frame makes it light weight and when separated into its four pieces can be handled by almost anyone. The side-by-side seating allows for ease of conversation while out riding. The Ricksycles' independent drives allow each rider the ability to choose their own gear and rest when they so desire. This trike can also be driven solely from either side to allow someone who is unable to pedal or a small child to sit back and enjoy the ride. The Ricksycle, designed with family in mind, is connectable which allows a family of four or larger to stay together on their ride. Since this is a modular cycle the layout of the Ricksycle can be changed as often as you wish. For example you can set it up one day for an adult and child and for your next ride, two adults or a family of four with two adult and two child pedals." www.hfffabricating.com.

RCN ADVERTISERS: We'd like to thank our sponsors. Link directly to their sites from our blog: <http://recumbentcyclist.blogspot.com>. ♦



The 2007 Day6 Dream SL with electric motor.
Watch for an upcoming RCN review.

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Please write us. Letter limit is 300 words (or write an article).
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RCN & TRIKES

Thanks for a great publication. It really helped me find my trike back in 2004. I picked up a copy of RCN at Ajo Bikes here in Tucson. I had tried a Catrike Speed at the store, but wanted more of a sport/touring machine. I ordered a WizWheelz TT 3.5 after looking through your mag. I started riding the trike in April of 2004 and have 15,000 miles on it! I've generated lots of interest in trike riding from people I meet while riding. My brother also purchased a WizWheelz. A friend purchased a Catrike Road, my step brother was looking at recumbents. His first ride is a WizWheelz TTC.

I just got a new Catrike 700 in September. I've put 2300 miles on it to date and can't say enough good words about this trike. I've also picked up a used WizWheelz TT 3.4 for my folks to ride. My mother at age 73 rides for an hour, 3-4 times per week. She just loves it. My step dad, at 85 years gets on and is a kid again.

The RCN news, equipment and road tests are very informative, and good reading too. All the best.

Rex Faucher

RANS DYNAMIK

I just wanted to say thanks for the positive article about the RANS Dynamik, our entry level crankforward with the stand and ride geometry. It is such an open minded response to this form of cycling that is allowing CF's to grow, and where we take great pride in being able to provide a cycling platform that keeps people into cycling. As many may know RANS was one of the few bent makers in the beginning, and the current CF movement strangely parallels those days, but as we say, without the learning curve. People as always are ready and willing to try new forms of cycling, and RCN plays an important role in getting and keeping the new ideas out there. Thanks Bob!

Randy Schlitter
RANS Bikes

Editor's Comments: For more information on RANS Crank-Forward bicycles, check out www.ransbikes.com and www.crankforward.com.

TRIKER 72'S CRASH

I've noted the letters in RCN following Triker 72's horrific crash (letter in RCN 096). I hope he has speedy and full recovery. As far as I can see, unless you go to the trouble of making some

computer controlled auto pilot, if you brake one front wheel, especially at speed, then given the laws of physics, the trike must tend to rotate about its vertical axis. One might say well this does not happen with a bike or a car, so why should it happen with a trike? The reason is simple. A bike has the front wheel inline with the center-of-gravity, so there is no offset, and a car has only one brake pedal and balanced brakes on the front wheels.

So we do have a choice. If trikers find that having independent brakes makes riding too scary for them, then I would suggest getting their local bike shop to link the two front brakes into one lever for them. We have often done this when the rider only has the use of one hand. However this system does not give you the option of braking with either hand and signaling with the other, like slowing for a corner in traffic. Nor does it give you the strength of both hands for an emergency stop, or the ability to steer with the brakes at high speed on loose surfaces. With hydraulic brakes you get more power, but a failure could stop both systems from working. So for these reasons we fit independent brakes as standard.

When Windcheetah designer, Mike Burrows, saw one of my first trikes, he said I was a bloody idiot for having independent brakes, so the rider got some speed up put one hand up in the air to show he was not using that side, and locked up the other front wheel. The trike stopped in a straight line. The other trike maker at that time, Peter Ross (Trice, now ICE), said that my centre point steering made all trikes without it obsolete.

However we understand that some cyclists changing from riding a bike to riding a trike are still going to use only one brake, just from force of habit, so we have been doing a LOT of testing to see if we can improve our trikes still further and completely overcome this problem. We have found that if we use a lot of negative scrub radius, and put the pivot axis OUTSIDE the contact patch then the trike will self steer in the opposite direction. Thus counteracting the pull from the brake. This is not easy to do, as it means all new frames and kingpins, and none of the old kingpin mounted accessories will fit, and will all have to be re-designed. However as safety is such an important issue to us, we are now phasing in this new front end geometry on all solo trikes, starting with the 2007 Series II GT and X-series trikes.

Ian Sims
CEO, Greenspeed

HIGH SPEED CRASH TESTS

Why don't you guys do high speed crash tests of recumbent bikes?

Test Dummy Wannabe

Editor's Comments: Since the "Triker 72" letter was printed in RCN 096, I've been asked by a few readers why I don't do high speed stability (crash?) testing of recumbent trikes. I liken this to being a TV crash dummy and I flat out refuse to do it. I ride test bikes in real world situations on all types of terrain at speeds up to 30 mph or so. Years ago I once rode at 52 mph on my faired LWB. A year or so later I had a tire blowout on a state highway. You'll only need to go down once before you agree with me.

All said, if you are an aggressive rider who likes pushing your bike at 40 mph into corners on fast descents, perhaps you'd be better off with a design with a more balanced weight distribution.

DUAL BIG WHEEL DESIGN FLAW?

I have built over 40 different recumbent test bikes since 1980 and long ago I gave up on LWB recumbents with the same size wheels on both ends. Though nice in regular riding, they were horribly prone to under-steer or washout when they started to skid. When the front wheel starts to slide out from under you in a single-track vehicle, it's pretty much impossible to recover, so the skid turns into a crash. With the faster bikes this problem grows more common, and more serious. The road rash is nothing compared to wondering whether the car behind you will be able to stop in time. A strong brake on the front wheel only compounds the problem.

Plenty of research has been done on the steering of cars and motorcycles which is applicable to bicycles. With the usual front-steering, rear-drive bike, the ideal is to have the back wheel start to skid just a little before the front wheel does, so the wheel that does the steering still has a little control, and you have a chance of correcting things before you go down.

Bikes, especially fast bikes, should have stable handling in emergency situations, and manufacturers have a responsibility to work out the bugs. Using customers to do your testing is unacceptable.

Charles Brown

Editor's Comments: I haven't ridden any LWB recumbents that I thought had unsafe handling. However, we all have different standards about what is safe and what is not safe. A few years ago there we received several letters to the editor in regards to standard 26/20 LWB recumbents washing out in corners. In my almost 20 years of LWB riding, I've never crashed due to loss of front wheel traction — and I ride in the rainy northwest. Perhaps some of these riders ride on bike trails with sand or gravel dusted over the top, this could create a problem.

SRAM CHAIN

One of our customers had us change out his Gold Rush to 155mm crank arms. When I went to change out the chainrings, I noticed how worn the 42 and 52 tooth were, so, checked the rear cluster and found it worn out also. This bike came with the Sram PC 991 chain. When checked for wear, it was stretched on an average of 3/32" (in 12" of chain). So, I asked him how many miles he had on it, and it was less than 7,000. Granted, this a quite a few miles, but 3/32" is a lot of stretch! So, we changed out the chainrings, cluster, and are going to use the new KMC X-9 9-speed stretch proof chain and see how this combination works.

The reason I bothered to write is because I've never seen chain stretch a problem with any recumbent, and some with more miles than this. The owner is really good about lubing his chain, so it wasn't from neglect. He also keeps it very clean.

Bob Rohde
EZ Rider Cycle

RECUMBENT SAFETY

I had a phone call last month that really brought to mind the safety of upright bikes. The call was from my daughter Jennifer, she lives in Brooklyn NY and is an ER doctor, she also has a long recumbent background (she's been riding recumbent since she was 6 years old and she is 34).

She called me to tell me about the 5 Boroughs ride, one of the biggest in the country, 15,000 or so bikers ride a course through all 5 Boroughs of New York City. She was on duty the day of the ride and said she had four bikers brought in within a two hour period with exactly the same injury a broken clavicle of them a very serious compound fracture. When she asked them how it happened they all had the same answer: they slammed on the brakes and went over the handlebars and landed on their head and shoulder. Luckily they had helmets on, but that didn't save their shoulders.

She told them that if they were riding a recumbent it is impossible to go over the handle bars, no matter how hard you apply the brakes. I asked her if they listened to you, she said, "of course not, these are bunch of roadies, what do you expect."

Tom Traylor

TOURING BIKES

In my quest for the right touring bike I learned many things from reading RCN. Most factory bikes are so light duty that most are limited to a 275 lb. load by the manufacturer.

Only a few have heavy-duty dropouts, the weakest part of a bike unless you use cheap wheels. Front wheels are effectively twice as strong as rear wheels because of the lopsided dish pattern of the spokes on the rear wheel. So a tandem wheel with symmetric spoke dishing and a drum drag brake is very useful for fully

loaded touring, and descending a mountain. The things that make a bike easy to balance at slow speed are:

Wheelbase: SWB bikes have a faster minimum speed than the LWBs because the front wheel doesn't change direction a quick as on the long bikes. This is mostly due to reaction time, and the laid back steering angle helps keep the wheel straight.

Crank height/seat angle: Vertical positions are easier to balance but horizontal seats are more comfortable on long rides. So the best compromise would be to have the crank 4" below the seat.

Steering: Over-seat steering is easier to learn than under-seat, but not as comfy for long rides.

Jendi Shloyn

***Editor's Comments:** We'd like to see some more rugged touring recumbents offered, perhaps with tandem wheels, 36 or more spokes and chromoloy frames and forks with fully trussed frames. These aren't my rants, but standards for touring upright bicycles for decades. I would also like to see stronger touring hub spacing which is not available on single recumbents.*

You can tour on any bike, but durability and frame stiffness become issues when you load it down with a touring load — in other words, push the bike to extremes. This is a totally different situation than if you are just riding for sport with a minimum of gear. Watch for an article on recumbent touring bikes coming soon.

FLORIDA STATE SENIOR GAMES

The Florida State Senior Games 5K and 10K Bicycle Time Trials took place in Cape Coral, Florida on December 5th, 2006. And for the first time, the event included a separate recumbent division. Out of 103 cyclists competing, only three of us were on recumbents — miniscule showing. I think this will become a prominent event in coming years.

It was a cold and windy morning. The course was an out and back. Out was against the wind, which meant slow going for most riders. The nice thing about a head wind going out, was that we had a tail wind coming back. That made for some high speeds across the finish line. The officials sent the youngest to oldest women wedgies out first followed by the men youngest to oldest. Then came the recumbent class cyclists. Each rider was spaced 30 seconds apart. Martha (my wife) was the 102nd rider to go out. She won the Gold in her age group in both the 5K and 10K time trials. I won the Gold in my age class for both events as well.

We really enjoy competing in the cycling events and it gives us a time goal to try to beat. Knowing we will be competing a few times each year makes us keep in shape. For more information, check out www.flatsports.com to find Senior Games and events near you.

Joe Pfeifer ♦

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without tools. One does have to be careful to make sure the quick release is tight enough to prevent slippage during riding. The seat stays are attached to a bar on the back of the seat and are adjustable in with a 4mm hex. This allows for a wide range of seating positions. It comes with an open cell pad inside a breathable seat cover that attaches to the shell with Velcro.

The seat as manufactured will not fit into the suitcase for packing. After experimenting with cutting the seat into two parts that could be reassembled Bike Friday finally decided to just cut the first few inches of the seat off straight across and finish it with edging. It was the right solution since the top part of the seat provides no support. The only down side is some euro style seat bags won't fit on it.

My main ride is an Optima Lynx and I love hard shell seats. They stabilize your hips, a boon for those of us with sacroiliac problems, and provide a solid base to push against when climbing hills. Due to some initial problems with the folding rack provided by Bike Friday, I was forced to use the bike for a short time with the seat more upright than I prefer and experienced recumbent but for the first time. This went away when I resumed the more laid back position for which these seats were designed. With weight spread out over the length of the spine, I find these the most comfortable seat for a bent. Some people experience problems with sliding forward; this can be prevented with a wedge under the base of the pad (Hostel Shoppe carries these). Head rests are available for shell seats, but I don't use them. I would like the seat better if it were a bit wider at the base.

RIDE: One might expect the dual 20" wheels, 100 psi tires, and laid back position to result in a harsh ride but this is not the case. There is no suspension. The ride is cushioned by two elastomer plugs mounted to the back end that contact the main frame when the bike is unfolded. I have one grey and one blue one. I assume they have different properties and were selected on the basis of my weight. When I am riding unloaded on the flats or with 20-30 pounds on the back rack on hills the ride is perfect — otherwise I get some pogo-ing when I am pedaling hard. I haven't decided yet if I want to try a different configuration.

An annoying feature of the bike is a tendency, under certain conditions, to "auto-fold." It is most likely to happen climbing, when there is weight on the back rack, and/or when the rider's weight is forward and pedaling is hard and slow. Instead of driving the rear wheel, the chain pulls the back end of the bike forward as if it were folding. This requires a full stop, and it may be difficult to keep it from recurring on startup. Undesired folding also occurs when walking or lifting the bike by the stem or main frame. Bike Friday is now providing an anti-fold solution which is a simple buckled strap connecting the

back end and the bottom part of the seat stay. I haven't used mine yet since I have pretty much learned to prevent it by careful downshifting as I approach hills, and by keeping my weight back. The strap adds another piece of complexity to the "quick-fold" feature of the bike.

The bike's boom is hinged to allow for folding. It rests in a cradle that can be adjusted for variable bottom bracket heights. I have ridden mine exclusively in the highest position. Adjustment involves loosening one bolt and rotating the disc and the collar with the cradle independently to the desired height. I took delivery in winter, so my first use of the bike was on a Kurt Kinetic trainer. I noted at that time there was a lot of side flex in the boom and in fact there was so much movement the paint on the boom was worn off where it contacts the cradle. The flex is less noticeable when riding the bike on the road but there is still enough, especially when hill climbing, to continue the paint damage. I am still working on ways to solve this problem.

PERFORMANCE: Apart from the problems described above the bike is light, responsive, and fast, faster than my Lynx. It climbs like a little Billy goat. In the middle gears it is quiet, a big improvement over the old SatRDay, though at either end of the gearing spectrum there is a fair amount of idler noise which is worse if you don't clean the idler frequently or if it is out of adjustment. It feels very stable on the down hills. Tight turns are a little challenging. Most of the time I can forget I am on a "folder" and can get to that nirvana place where rider and bike are one animal, something that never happened with the old model.

FRAME: With pedals the bike weighs in at 27 lbs. With rack, computer, water bottle and a trunk bag it weighs in at about 30 lbs.

STEERING: Bike Friday uses a unique above-seat steering designed to optimize the folding feature of the bike. The lower part of the stem has a quick release system that allows it to fold down along side the front wheel. It requires pulling up on the quick release skewer after releasing; this prevents accidental folding during riding. I have found the stem to be quite stable. The upper part features two parallel clamps facing forward to hold the bars. The bars are curved 180 degrees and sweep forward, out and back from the clamps. The result is hand positions that are out to the side and low. The bars can be moved fore and aft and rotated up and down providing for a lot of adjustment. When the original bars were set correctly for me there was over 70mm of bar protruding back from the clamp, enough to bump my legs when making tight turns.

The original stem featured a quick release for the handle bars. I found that it was impossible to fasten it so that both bars were tight enough to prevent slippage when pulling up on the bars.

This was noted by other early users. I contacted Bike Friday about it and they told me that the supplier for the early stems had not produced what they wanted and they would replace the stem. When the new stem arrived the quick release was replaced by two collars fastened by hex bolts, so now "quick folding" requires a tool. Furthermore the original bars would not fit in the stem. After initial advice to "try some Tri Flow" Bike Friday replaced the original bars which by that time were very scratched up from all the attempted assemblies and disassemblies. At my request the bars were shortened to prevent so much bar from protruding back. The replacements arrived without finish on the back end and no caps. I purchased black caps at a hardware store that go over the bars' back ends and serve very nicely.

The original setup included two collars for the bars designed to be set so as to contact each other when at your preferred bar position. This is supposed to make it easy to return them to riding position when unfolding. I found they did not work very well and made disassembly for packing more complex. I solve the problem by marking my bars at the open space in the clamp which allows easy visual alignment.

I am happy with the end result of this process however communication with Bike Friday was very frustrating. None of the changes were discussed with me in advance. Parts arrived without explanation or instructions, and as of this writing the folding instructions for the SatRDay on the Bike Friday web page still feature the original design for the stem and bars!

COMPONENTS: The SatRDay is a custom bike, so it can be set up virtually any way you desire. Most of the standard configurations revolve around the 9-speed Capreo rear hub with 9-26 cassette. This provides for a gear range of 22"-108" with a standard triple crankset and the 20" wheels. I ordered my bike with Ultegra components without realizing that the new 6600 setup features the bottom bracket as an integral part of the crankset (no longer offered). I love the way it works but wish I'd gotten a self extracting crankset. Assembly requires a torque wrench and disassembly is difficult, not good if you pack and unpack often. Dura Ace Bar Ends seem to be the shifter of choice on most configurations. I chose to go with them on Paul "Thumbie" mounts making them into the most elegant thumb shifters you will ever see. I find this setup accommodates a number of hand positions and makes for stable steering while shifting. The whole system shifts beautifully.

CHAIN MANAGEMENT: The bike has a long chain that crosses ahead and behind a single idler. The idler can freely move in and out on its mount which helps keep the chain in line over the range of gears. The idler and two guards are each clamped to a single bracket and can be individually adjusted up and down and rotated. It is important to clamp these very securely to prevent them from being knocked

out of line during folding. Imperfect adjustment results in noise and the power side of the chain jumping off the cog.

BRAKES: On Walter's advice I got Avid Single Digit brakes with the Speed Dial silver levers. These are the best brakes I have ever used. Light, responsive, with sure, even braking and you really only need one finger!

WHEELS: My wheels are 20" (406) with Sun CR-18 rims, Wheelsmith butted spokes, and I treated myself to a Chris King upgrade for the front hub. This is my third Friday and I have to say the wheels on all of them have been well built, true, and I have yet to break a spoke. This bike is no exception and even with the challenges of packing and airline handling I have had no problems.

TIRES: There is a wide selection of tires for this bike. I requested Schwalbe Marathon K20s, the bike arrived with the Primo Comet Kevlars we had originally discussed. Bike Friday, promptly sent me the Marathons and allowed me to keep the Comets. I have used both these tires on other bikes and find them quite satisfactory for road riding. The Schwalbes seem to wear better.

FOLDING: One of the advantages of a Bike Friday is that it can be readily folded into a small space for storage or transport. The new Sat'RDay is no exception though the fold is more complex than some of their other bikes. It requires the release of three quick release skewers, loosening two bolts with a hex wrench, and extracting the chain catch (a hook on an elastic mount) that keeps the chain from sagging. The handlebars fold up, the front wheel rotates to the right, the stem folds down along the front wheel, the seat flips up and over the rear wheel, the boom folds up and the rear wheel collapses parallel to the front. It takes some practice. The instructions Bike Friday provides are not the best and in fact are outdated. They keep promising an instructional video that never comes. One has to watch the cables carefully to make sure they do not get pinched by the chain when folded and that they end up on the correct side of the stem and boom when unfolded. I find it impossible to fold without dirtying my hands and so I carry cloth gloves. Also, the seat pad ends up resting on the chainring, infecting it with grease that then stains your shirt. My husband, who does the laundry requires me to put a towel (marked for the grease side) between the seat and the rings when folding.

UPGRADES/ACCESSORIES: Bike Friday has an awesome selection of very attractive powder coat colors. I upgraded to a "dazzle" color; racing green (\$50). There are a kickstand and mount (\$33.50) for the bike. It goes on the chainstay and works provide stable standing. I highly recommend it. Wireless computer is a must if you are going to fold or pack. Most don't have the range for handlebar mounting so Bike Friday offers a Low Mount bracket



The author, Diane Pittman, and her bike



The BF folding tweener bars



The seat attachment

(\$10) that goes on the stem and works well with my Cateye Micro Wireless. I purchased the Bike Friday folding rear rack (\$100). Its main advantage is that it folds flat for packing. (It is impossible to pack a conventional rack in the same suitcase as the bike.) The original stays and mounting instructions made it way too high and it caused considerable damage to my seat when it bumped up against it on rough roads. Bike Friday provided longer stays and

a balance of practicality and performance

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some informal cryptic instructions by email that eventually resulted in an acceptable lower profile mount, but the rack is too far back so loads tend to cause folding of the bike. I replaced it with an Old Man Mountain Sherpa for riding close to home and only use the folding rack when packing for travel. Minoura makes a water bottle cage mount that fits nicely on the seat stays and allows for access while riding. They have a quick release version that is nice if you pack a lot. Most hydration systems can be modified to attach to the back of the seat. I use a Camelback Lobo and others have been able to use the Fastback system designed for hard shell seats.

I purchased the Samsonite Flite case and packing materials (\$229) so I can take my bike as regulation baggage on the airlines. I have packed and unpacked several times, my first attempts required a lot of time and patience. I found the Bike Friday's instructions lacking. Now I pretty much have it down. The whole procedure takes about 30-45minutes including the rack. I've started taking the chain off (easy to do with SRAM power links) to prevent it from rattling around and making everything greasy. I can get the bike, packing materials, rack, and torque wrench in under the airline's 50 lb. weight limit (just barely!) The case has a retractable handle and wheels making it easy to move. So far I have had no problems with damage in transit other than a few paint scratches. The packable feature is the main reason to get this bike. It is wonderful to be able to ride a well fit, high quality, recumbent bike when I am far from home.

COMPARABLES: No other recumbents fold and pack the way a Bike Friday does. The Volae Tour has a similar geometry and the HP Velotchnik Grasshopper has similar dual 406 wheels. Interestingly, the only other folding recumbents are trikes.

RECOMMENDATION: Overall I really like the bike. It is a quantum improvement over the old SatRDay and it does what I bought it for. The folding and packing features allow me to maximize my riding time for commuting and

travel and the end ride is worth the costs in time and design compromises.

I am less than happy with how Bike Friday approached customer service. The sales department was unrealistic about how refined the bike was and there was no organized means



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for owners to supply feedback. While inquiries and requests were dealt with cheerfully and with full intent to do the right thing responses were for the most part disorganized with poor tracking and follow through. This frequently led to mistakes, delays, extra cost (which BF covered), and customer frustration. They fulfill their promise of making things right for the customer but it can be difficult getting there.

Unless you really need the folding and packing features now — I'd advise waiting until the bike becomes more refined. If you don't need the folding and packing features you can get better value in cost and performance from a number of other bikes.

FOR: Packs and folds allowing for efficient transport; light, fast, and fun; quiet drive train for a single chain bent; perfect shifting.

AGAINST: Expensive; disorganized customer service with poor communication and instruction; complex bike requiring a lot of fiddling to get things right; excess flex in boom.

NUMBERS: Wheelbase: 39". Seat height: 23". Bottom bracket height: 24 3/4" to 27 1/2" Weight: 27 lbs.

FRAME & SEAT DETAILS: Frame: Bike Friday Sat'RDay 406. Fork: Bike Friday. Chain idler: Bike Friday 8mm power and return. Headset: Chris King 1-1/8" Seat: Optima Carbon Hardshell (3 sizes available). Handlebar and stem: Bike Friday. Color: Racing Green.

COMPONENTS: Rear derailleur: Shimano Ultegra triple. Front derailleur: Ultegra 6500. Shifters: Dura 9x2/3 Bar Cons on Paul Thompson mounts. Crank: Ultegra 6600 triple 30/42/52. Bottom bracket: Ultegra 6600. Cassette: Shimano Capreo 9-26 9-speed. Chain: SRAM PC 69. Brakes: Avid Single Digit. Brake levers: Avid. Hubs: Front Chris King Rear Shimano Capreo. Rear rim: Sun CR-18 32". Front Rim: Sun CR-18 24". Spokes: Wheelsmith butted. Tires: Primo Comet Kevlar 20 x 1.35" 100 psi rating. Pedals: MKS touring. ♦



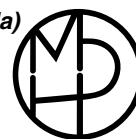
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SIDEBAR: Another SatRDay

By Alan Weiss

I own a SatRDay Tour; I believe it is frame #7. I suffered some early-adopter problems: the frame was originally too small for me and was reworked; a plastic piece dug into my leg as I pedaled; the original quick-release for the handlebars proved impossible to tighten sufficiently so was replaced by an Allen bolt with associated hex key; this bolt eventually stripped (or the nut it attaches to stripped), and so the top stem was replaced; the cables rub my right leg (maybe they're too long?). Bike Friday mainly gave good service, though has been surprisingly bad at communication, not telling me when parts are shipping, sometimes not responding to written complaints, not telling me when they changed things on the bike, but always helpful and friendly on the phone.

I wanted the bike for multimode commuting: bike and train. So I needed a rear rack to hold my pannier and tool kit. A rack makes the quick-folded bike a VERY large package. But it also enables me to lift the rear of the bike easily; without it, the rear wheel droops down when picking up the bike by the natural handholds of handlebar and seat.

I find the bike to be a great riding bike, but not a great folding bike. It handles very well: no problem at any speed, from slow climbs to high-speed descents. The bike seems quite

aerodynamic. Yet the folded size is very large and difficult to handle; like many folding bikes, it does not roll when folded. I found the best way to take it on trains is to fold the handlebars up prior to getting on, then to roll the bike to its destination, and finish folding it once there. The cables lie against the chain when the bike is folded, and are getting a bit chewed up. It takes much effort to get the bike packed in or out of the suitcase, minimum 1 hour.

Each time I ride the bike, I recline the seat back farther. This is mainly more comfortable, at the risk of straining my neck, but gives a somewhat less-comfortable hand position, and makes it harder to see behind me. I have only a left-hand mirror, perhaps I should get another.

My bike was set up with the following options: SRAM dual drive, 52-tooth chainring and 11-34 9-speed cassette, yielding a gear-inch range of 21-120 (excellent); 155 mm cranks (probably not the best choice, they make it hard to do jackrabbit starts, which are sometimes helpful in NYC, but they do make spinning very easy); Velocity wheels (good choice, very strong); SRAM chain (OK so far); Shimano 324 SPD/plain pedals (maybe I should have gotten SPD on both sides, I think cleats are essential on bikes with high cranks); Schwalbe Marathon slick tires (good, strong and grippy); Bike Friday fenders (OK, front is good, rear sways alarmingly). Accessories on the handlebars (front light and bell) block forward vision a slight amount. ♦

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By Tom Culver

I owned a Windcheetah trike about 10 years ago. I loved it but because I was living in central London at the time, it was impractical. The low profile made it risky in traffic, and I couldn't take it with me on the train to get out to the countryside. So I bought a PDQ/Presto (PDQ/P) that I could take on the train. These two machines, the Windcheetah and the PDQ/P, are my reference. I have ridden a good many miles on each and they have influenced what I wanted in a new trike.

I knew that I wanted a higher trike for a number of reasons. First, I want to be able to get in and out of the seat without hanging on to anything. It is all very well grabbing the front wheels if you have no fenders, but in any damp climate that is not practical. Second, I don't want a high bottom bracket relative to the seat because my feet go to sleep and my toes get numb. A low seat requires a big gap because my feet would otherwise drag on the ground. I have found that level or two to three inches above the seat (as on the PDQ/P) works fine, but this is only possible on a higher trike. I do not want too much recline on the seat because I find it very uncomfortable to have to hold my neck at an unusual angle. The higher seat base and upright back also mean that my head is a good deal higher than on a lower trike ... about the height of a sports car driver's head. As a result, I am more visible and can see better.

I rode a Trice Explorer and found that it fulfilled these criteria, but it was expensive. The Trice T is the same dimensions so I knew it would suit me. But I didn't buy one last year because I was concerned about getting it into my motorhome. The 2006 model has a rear suspension and can be taken apart easily. I thought this seemed too good to miss so I bought one.

USE: The T is a touring trike. Its primary virtue is comfort. Like all the standard models it comes apart quickly. The seat comes off in about a minute with three quick release fittings. This is very convenient not only for packing the trike but also for working on it. The fenders come off with one bolt each (quick release as standard on the rear). The rear carrier has two quick release fittings. The wheels and brake plates come off with the axle bolts. When the back wheel is out the rear fork folds under the frame. Dismantling down to that level (which will fit in almost any car) takes less than 10 minutes.

You can make it ever smaller by removing the whole rear section of the frame and taking out the boom. This also involves removing the



chain. A quick release kit is available for the front fenders, handlebars, boom adjustment and front axles, which reduces disassembly time to about five minutes. Reassembling takes a bit longer. But not so long that taking it apart and putting it in your car for a day out on the road would be impractical.

SEAT & COMFORT: I knew I wanted a mesh seat. My Windcheetah had a foam rubber seat with a cloth covering (over a composite shell). After every ride I returned with a big wet patch of perspiration on my back. The seat would turn into a wet sponge if it was left in the rain. I resolved to have a mesh seat thereafter and the one on the PDQ/P is not only free from the dampness problem but is very comfortable. A bit short in the back perhaps, but otherwise perfect. The seat on the T is similarly free from sweat. It has a higher back and a lumbar curve which fits me. The back and curve are very comfortable. The base is not as comfortable as the PDQ/P. At first I thought this was due to the fact that it is new and I hoped it would stretch to fit my dimensions. This has happened to some extent. But the underlying problem is its width. It is nearly three inches narrower than the PDQ/P.

The width of a seat is a dimension rarely mentioned in reviews of machines, but it is very important. I suspect this is a dimension worked out by the original designer and never changed. I measured an elderly Ross Recumbent and found it to be exactly the same width. I guess Peter Ross made them that size when he first used a mesh seat in the late '80s. But he is a lot slimmer than I am.

The seat on the T is perfectly comfortable for several hours, so long as it is sufficiently reclined. The angle of the seat should be set af-

ter the suspension is adjusted. I have found that when the suspension is set as recommended, I am comfortable with the seat set at the middle position. I don't get a sore neck and my bottom is okay. But if the seat is too vertical, I am sitting on the seat rails and I suffer from recumbent butt after more than a couple of hours riding. I find I can get on and off without hanging onto anything. I just put my feet down and roll forwards or backwards. That was certainly not possible on the Windcheetah.

RIDE: I find the ride to very comfortable. It is certainly very stable. I have ridden it down hills at 35 miles per hour and felt perfectly safe. The king pins are inclined to afford center-point steering. The steering is very predictable, and never does anything unexpected. I can ride for hours in comfort. It is lower than most recumbent bicycles but the difference in the view is not discernible. The bars can be adjusted so that your hands fall onto them in the most natural position. This must be the most comfortable way to hold the bars on a cycle.

PERFORMANCE: The T is not meant to be a speed machine. Trice makes other machines more suited to fast people. It is meant for touring and for that, comfort is most important. It is very comfortable. It goes as fast as I pedal and, as with most cycles, speed depends mostly on the person pedaling. But there is very little flex in the frame which means that what you put into the pedals comes out at the wheel. Hill climbing is fine on moderate hills and as fast as on the PDQ/P. It is slower on steep hills because I don't have to balance and loaf along in the bottom gear. That is one of the advantages of a tricycle.

FRAME: The basic frame is in three parts. The central part in the form of a cross is T45

carbon manganese steel and finished in an attractive metallic blue. This section is made by ICE in their own workshops. The brazing on the steel is excellent and barely visible. The boom is aluminum with the post for the front gear change and the fitting for the crank set. The rear section of the frame and the rear forks are also heat-treated 6061 aluminum. The welding on the aluminum is obvious but looks thoroughly and carefully executed.

It may be this combination of steel for the central section and aluminum at the ends that produces such a comfortable ride. It is stiff enough so that there is almost no flex even when pedaling hard, but compliant enough to be comfortable. The rear fork is asymmetrical, which means that the wheel can be built centrally over the hub and there is room for any tire you might choose without fouling the chain. The factory gives the weight at just over 37 lbs. without pedals or any accessories. That is probably correct. I weighed mine on my bathroom scales with pedals, mirrors, fenders, computer and bottle cage and it came to 42 lbs.

STEERING: The steering is indirect through a wide set of under seat bars which are adjustable for width and angle. The bars are attached to a rear facing handlebar stem on a steering head on the frame. Two more ordinary cycle steering heads are the king pins. These are angled out at the bottom to effectively eliminate brake steer. The result is steering that is both very easy and positive. One can easily steer the T with a couple of fingers. It always goes exactly where you expect it to. The tracking is the one adjustment that is done at the factory and you don't need to do anything to it unless you have an accident.

SUSPENSION: The 2006/2007 T has rear suspension. It is a very simple system. It uses an elastomer between the main frame and the rear fork. There are three elastomers available in three varieties of firmness and three positions to fit them. One can easily stop beside the road and make a change in about five minutes. They are the same elastomers used on the Birdy folding bike. The rear suspension really works. The result is that you never get a bang up your back: what the suspension doesn't absorb the seat does. As with any tricycle one learns to avoid the potholes. I find that if I line the hole up under my knee it will miss all three wheels.

GEARING: When I learned that the rear fork is designed to take the fitting for a Rohloff gear that is what I wanted. Trice will not fit one at the factory on the standard models. They advised I try the gearing that comes with the trike and that turned out to be good advice. Then I thought I would like the Shimano bar end levers to control the gears. This comes as an expensive kit complete with cables. I thought I would try the standard set up and get the kit if I was not happy with that.

The standard set up is Shimano Deore derailers controlled by Micro shifters. The stan-



Me riding the ICE T



The ICE T rear rack



The rear swing arm, suspension pivot and seat mount.

dard crankset is a 170mm Campagnolo Veloce 30/42/52 giving a gear range of 18.2 to 92.2 inches with an 11-32 9-speed cassette. There is an optional 26-tooth giving a 15.6 bottom or 55 giving a top gear of 97.5. There is a free option of 155 cranks with the same number of teeth on the rings. I have found this low enough for the few hills around here but opted for the 55 to give me a bit more speed when the wind is behind me or going downhill.

I was concerned at having the changer at what seemed the wrong end of my hand. But the Micro changers have a very low turning sec-

tion, 2.5 inches. I find my hand falls naturally to the bottom of the grip and so is in the right place. Very little pressure is required to make a change. It took me a while to learn which way to turn but then I worked out the formula: turn right for low gears and slow progress, turn left for high gears and greater progress.

The "Micro" brand twist shifters do just what they are supposed to. You turn the handle and the gear changes with little noise or fuss. They have indicators on them which show you which gear you are in. The left one is pointless because the chainrings are before your eyes. I have not heard of Micro components before but so far I am pleased with them.

I opted for the "Lasco" brand 155 cranks and they are quite nice. The 155 cranks seem long to me because I have been using 150s on my PDQ/P for about 7 years.

CHAIN MANAGEMENT: The chain runs through two tubes on the drive side and one on the return. I have not previously used chain tubes and found these very quiet and they do seem to keep the chain clean. They also keep me clean. It is really nice to finish a ride without a smear of chain grease on my right leg. The drive side goes to a single Delrin just under the seat. This performs its job adequately but is a little bit noisy. Not enough to annoy, but you know it is there.

I have replaced it with a Terracycle idler. I have one of these on the PDQ/P and think they are really great. Putting it on the T meant moving the drive side tubes a bit further away from the plate that holds them. I found it an easy job. The drive is beautifully quiet now and feels smoother. I think I would fit one of these idlers to any recumbent.

The chain is a KMC which seems okay, better than I expected from what I have read about them. My chief complaint is that when you try to rivet it back together the side plates distort. I had a plate come loose after what looked like an adequate repair. I caught it before the chain broke because I noticed the chain was jumping. I will replace this chain when it begins to seem worn.

BRAKES: Sturmey Archer hub brakes on the front wheels. I am a great fan of hub brakes. If I had to pay more to have them rather than discs, I would. They are so smooth and trouble free. The smaller the wheel they are in, the more powerful they are. These are as powerful as anyone would want and can be controlled very subtly with the levers. It takes them a few thousand miles to bed in properly and come to full power.

The levers have locks on them and I think these are an essential for a trike. They make it so much easier to get into and out of and prevent the trike going off on a frolic of its own. It is necessary to adjust the brake properly for them to work. Too loose and they don't hold the machine, too tight and the lock won't work. But the correct adjustment is also a very convenient



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one to use. It is easy to control the speed with either brake. There is almost no brake steer and the brakes are powerful enough to stop the trike quickly with one hand.

WHEELS: The wheels are 20 inch, alloy rims, 36 stainless steel spokes in each, crossed two with a Shimano hub at the back. After 1,500 miles, much of which was on rough cycle tracks, they are still perfectly straight. They are good strong wheels with rims wide enough to fit any 406 tire you want.

TIRES: These are Kenda Kwest 406 mm 20" 100 psi. They are wearing reasonably well. I run them at about 70 psi and they are comfortable and still easy running. I am going to try Big Apples when these need to be replaced.

UPGRADES/ACCESSORIES: A flag and a single mirror are included in the price. There is a host of accessories available with the T. I have the fenders which are very good (\$154). After years of struggling with fender wires to get them to fit properly these are marvelous. Loosen two bolts and you can put them exactly where you want them. All three are one-sided and can be removed with a single bolt. A head rest is available. I have never found these to be of much use. They just bang you in the back of the head.

Fitting a rack to a cycle with rear suspension is never easy if you want the luggage to have the benefit of the suspension. The Trice rack (\$179) is a wonderful piece of work. It is not light at about 2.5 pounds but is beautifully made. Best of all it fits very firmly with two sets of quick release. You can take it off in a minute. So I only fit it when I need it. ICE has designed a set of Radical bags (\$113) that do not require a carrier because they fit across the seat. These have a capacity of 25 liters so they are all you need for normal use. They can be removed in a second — just lift them off.

I continued to use the 155 cranks for about 1,000 miles. They still felt too long. I found that Thorn (www.sjscycles.com) has a pair of 140s (see RCN 091 for short crank info). These are excellent cranks, very stiff. I have been using them for about 500 miles and I love them. Now I can go faster than my wife, which I couldn't do previously.

COMPARABLES: There are now a number of trikes in the less expensive range, including Greenspeed and WizWheelz and the new HP Velotechnik Scorpion. I think they are all a few inches lower than the T, though they certainly make trikes suitable for touring. The Greenspeed folds but I don't think they dismantle as quickly as the ICE T. HP Velotechnik has a new folding Scorpion model, the FX out for 2007.

PURCHASE: You can buy an ICE trike either from a dealer or direct. I did the latter. It came in a box about the size of two medium sized speakers. It seemed remarkably small to me. I spent a happy full day putting it together. It comes with a detailed instruction book and I think any reasonably competent person with some knowledge of cycle mechanics could do it in the same time. It is the best way to know how a thing works.

RECOMMENDATION: I was looking for a comfortable trike high enough for me to get into and out of it. I find the Trice T fills the bill very well. It is very comfortable for riding all day over a period of several days. It is very stable and handles predictably. It does what you need in a touring trike. A lower trike could also be narrower and would reduce wind resistance two dimensions. It would surely be faster at higher speeds. For me that would mean going down big hills. I prefer the comfort.

FOR: Comfortable, easy to disassemble, stable, excellent steering and reasonably priced.

AGAINST: Seat too narrow for me, slightly noisy idler, not as fast as a lower tricycle. (USA availability and dealers — ed.)

NUMBERS: Wheelbase: 39.4". Width 34.6". Seat height: 12.5". Bottom bracket height: 15". Weight: 37.3 lbs. Weight limit rider: 252 lbs plus luggage.

FRAME & SEAT DETAILS: Frame: T45 Carbon Manganese steel and

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My ICE T apart

6061 aluminum. Chain idler: single. Seat: steel frame with mesh seat. Color: Metallic blue.

COMPONENTS: Rear derailleur: Shimano Deore. Front derailleur: Shimano Deore. Shifters: Micro long twist grip. Crank: 170 Campagnolo Veloce or 155 Lasco 30/42/52. Cassette: Shimano 11-32 9-speed. Chain: KMC Super Narrow. Brakes: Sturmey Archer drum. Brake levers: fitted with brake lock. Rear Hub: Shimano. Rims: alloy 36 hole laced 2X with stainless steel spokes. Tires: Kenda Kwest 406 100 psi. Pedals: not supplied.

NOTES

My Windcheetah was constructed from a kit and was not purchased from the current manufacturer. I call it a PDQ/Presto because when Pashley took over making these bikes, they bought the work in progress along with the tools and patterns. Hence the very early ones like mine are more Presto than Pashley. ♦

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By John Lindsey
www.funnyfarmart.com

This is a review of my Actionbent Jetstream above-seat steering short wheelbase. This is not an infomercial, but an outline of my real world experiences with this bike that I ride daily for transportation. Actionbents are made in Taiwan by China Mascott and imported into the USA by Actionbent and perhaps others. Actionbent is a company based in Redmond, WA. They sell on the Internet and have no brick and mortar store.

I'm a carfree couch potato with bad wrists, bad back and a bad attitude. You have previously read my Sun USX trike review in the pages of RCN. I got this new bike this past Spring, but I still have the USX. I wanted a maneuverable heavy-duty bike that was comfortable enough for long leisurely rides and that would fit onto a transit bus bike rack.

Not having a credit card or enough patience to save up \$2000, I thought I'd try to get by with a cheaper bike for a while. This article will show why cheap bikes may not be so cheap if you want a dependable machine for daily use.

MODIFICATIONS: If you look carefully, you may note from the photo that my bike is not stock. I made the following modifications:

1. I moved the seat rearward to improve weight distribution and more the seat into a more upright position.
2. I added 2.5" to the head tube to raise the bottom bracket so that the crank arms did not hit the front wheel/fender.
3. I added a TerraCycles fold forward stem and Volae handlebars.
4. I replaced many components, nuts and bolts and improved the chain routing.

The ergonomic modifications were made to better fit me (40" x-seam). The component updates were done to make the bike more durable for my daily commute.

SEAT: I got the upgraded hardshell seat with headrest (stock is aluminum). The headrest needs to be modified if you are going to wear a helmet).

The seat is very reclined with no option to move the seat back to a steeper angle (I later found out that the upgraded fiberglass seat is more reclined).

I built a sliding seat bracket that allowed for a more upright seating position. This change also



Lindsey's modified Actionbent Jet Stream

improved the weight distribution to as close to 50/50 as I could get.

The pad is one-inch thick closed cell foam with Lycra glued on, then held on the seat shell with Velcro. I was amazed that it is enough padding for me. It does not soak up sweat like open cell foam and dries quickly after a good sponge down.

FRAME: The frame is the heart of any bike — all components are changeable. I chose this frame for the strength of the triangulated rear end. However, I think that most non-triangulated frames are stronger than they appear.

After moving the seat rearward, the pedals were touching the front wheel with my 40" x-seam. I modified the frame by adding 2.5" to the head tube — which raised the bottom bracket up higher and gives me more clearance. The pedals are now 4.5" off the front wheel — but my heels still can touch the front wheel/fender. My modification added about 3/4" of trail.

I changed as many bolts as I could to stainless steel because I once had a bolt rust so bad that I couldn't get it off. Marine grade bolts should be used on every bike.

I also set up the controls with slick stainless steel cables with continuous housing (no naked cable). This keeps the road grit out and cables operating smoothly.

CLEARANCE: Most short wheelbase bikes have problems with foot clearance with the front tire. If you install fenders, the problem gets worse. For riders with short legs the problem is magnified again. With the stock set-up, I found it difficult to turn sharp or start off at a stop light in traffic.

PAINT: The bright yellow powder coat shows off every speck of dirt. There was no




The 41" wheelbase allows it to fit onto the racks of our local city bus. However, the best kind of bike for a bus commute would be a small folding upright.



This is my sliding seat bracket. The forward hole was the stock permanent seat mount.

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other color choice at the time.

WEIGHT: The bike is supposed to weigh 32 lbs, but I don't really care how much it weighs. The best way to burn fat is to build muscle. With my improvements it weighs 45 lbs. All this is nothing compared to my 290 lbs. (half of that is leg muscle).

COMPONENTS: I have no respect for expensive and petite parts like the Shimano LX brake levers. I foolishly replaced the perfectly good Tectro levers. The cheap Shimano rear derailleur should work fine for years. Even if I did break one off my MTB years ago.

I use BMX sealed bearing platform pedals with no clips. I have no problem pulling back with out cleats. I've been a commuter cyclist my whole life and as far as I'm concerned racing equipment is a waste money. I did not try the stock pedals.

CHAIN MANAGEMENT: The stock chain routing just didn't work for me. I installed a longer chain tube to clear my rear fender.

GEARS: I installed a recycled Shimano Biopace 28/38/48 170mm cranks combined with the stock SRAM 11-32 cassette. I can't use a lower gear than 20 gear inches with out falling over unless my cadence is fast enough, so I have to walk up the steepest hills. The stock 30/42/52 road triple crankset was just too fast for me.

The stock SRAM twist shifters that came on the bike are not compatible with ski gloves that I wear in the wet weather. The twist shifters are also aggravate my wrists so I installed Shimano Bar-End shifters.

Fitting the new bars I stripped the threads on the stem clamp, I had to build an adjustable stem riser. It may have been cheaper to convert it to under-seat steering.

WHEELS & TIRES: The Actionbent website listed the tires as 1.5" but it came with 1.25" Kenda kwest on 1" Alex DA16 rims. The wheels had 32 14 gauge spokes, on really cheap alloy hubs. The rear hub clicked as loud as an old Shimano freewheel. I replaced the wheels and tires, with 1.5" rims, better hubs and Schwalbe Marathons (front) and a Marathon Supreme on the rear. The new tires have a woven Vectran technology that is supposed to be stronger than Kevlar. It was developed for the Mars Lander crash bags.

ASSEMBLY: Most people can put it together in one after noon if they know what they are doing and have all the parts. The instructions were mostly photos with poor descriptions. All the difficult parts were installed and there is a small tool kit to finish it with. It took me several days to assemble the bike because of my modifications.

FIT: With the stock set-up, my knees would hit the handlebars and would not accept Shimano Bar-End shifters. I decided to order a TerraCycles folding stem and wider Volae handle bars which solved the problem.

ERGONOMICS: The stock laid back seat position may be more aerodynamic — but sitting more upright with my modified seat mount gives me more torque and power.

THE RIDE. The first day, powered by strong green tea, I spent several hours riding in figure 8's on uneven ground. I fell down several times. Was it this hard learning to ride a bike 50 years ago?

The first time I got up to the high gears down hill I felt like I was going to crash. I really wish I had some training wheels. After the first four mile ride I was ready to trade it in on a long low chopper bike. After riding to town a few times I felt I could eventually control the twitchy steering.

I get plenty of toe numbness from applying too much pressure on the pedals. I did find that by placing the arch of my foot over the center of the pedal helps, and bike shoes help even more.

The unsuspended ride is very stiff. I can get air pushed out of my lungs when I hit a hard bump. Rear suspension is very desirable, especially on bikes with laid back (38°) seats.

The turning radius is disappointing; I can turn a tighter circle on my delta trike. Trimming the bar ends may help but not much.

VERDICT. When I sent the money order for the bike I got it within a week (we're one day away via ground UPS). Actionbent answered my mailed inquiries about purchasing replacement parts. They don't seem to like to answer technical questions.

For short rides the SWB is really fun. For longer rides, a LWB bike can't be beat. Don't buy this bike to save money!

EDITOR'S COMMENTS: *In regards to modifying the head tube — the author told me that he believes that he could have accomplished the same end result by adding a taller suspension fork.*

We've had mechanics tell us that it can take 2-4 hours of shop time to set up an Actionbent recumbent. Perhaps some owners have done it in less time, some may take a long weekend or several evenings. We'd also suggest getting the wheels retrued at break-in. When you do all of this, the cost can add up. Don't think we're picking on Actionbent here. I'd suggest this careful assembly on any recumbent that is purchased mailorder and shipped — especially it is an imported bike.

We like the author's tips on stainless hardware and running continuous cable housing — especially in the rainy Pacific Northwest. With the Internet-sold recumbents you sort of need to have do-it-yourself mentality. Instead of running off to have the bike shop fix everything, you have to do it yourself or pay your local mechanic (be sure to ask what their hourly rate is). And expect to adjust and check all parts on the bike/trike when you assemble it.

The quality of the frame and seat looked fairly good. The components are okay for the price. More attention is needed with the assembly instructions and preassembly. Most buyers will need to get their bikes built up by their local shop. ♦

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Stainless bolts, cables & housing	\$100
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The Ultimate, Affordable and Rider-Friendly Recumbent Bicycle

By Bob Bryant

As we ride into 2007, *there are fewer affordable and new-rider-friendly two wheel recumbent bicycles to choose from.* Gone are the excellent easy to ride models like the BikeE, Vision Metro, RANS Tailwind/Wave, Huffy ReBike, Burley Koosah and Candondale. In their place we have far too many expensive high performance recumbent models. There are clearly not enough choices for entry level sub-\$1000 recumbent buyers these days. And we wonder why recumbents command only 1/2% of all bicycle sales? We really need to find a way to increase sales — and get entry level recumbents back on the right track.

What our industry needs is the recumbent version of the mainstream comfort bike. A price of \$1000 would be good, but \$600 would be great — and sell many more bikes.

WHAT IS A RECUMBENT?

Perhaps one reason why we can't keep our foot in the door of the mainstream bicycle shop is that we can't decide what a recumbent should look like. Is it a short wheelbase, long wheelbase, medium wheelbase or some kind of hybrid variant recumbent-like bike pedal-forward or semi-recumbent?

The vast array of recumbent choices and configurations makes it more difficult for the mainstream bike world to understand, learn about and sell our bikes. This identity crisis has to be what brought the crank-forward bikes to the mainstream. While they have their strong points, they are not as comfortable as a recumbent. However, they very well could be the NEW entry level recumbent replacement.

WHO IS OUR MARKET?

Once you decide who your market is, then you should design a bike to sell to that market. Many manufacturers don't seem to know who their customers are. While there is a market for recumbents for touring, commuting, performance and racing — the largest target audience is the common recreational cyclist. These riders might be:

- Non-cyclists looking to start riding
- Former cyclists who want to ride again
- Upright riders seeking more comfort
- Upright riders who want to ride farther
- Upright riders who have been injured

Or basically . . . a good portion of the North American population.

Some manufacturers would seemingly have

you believe that every customer is a racer. This just isn't so. Dealers will tell you that customers may come in looking for a fast bike, and fast is good, but rider-friendliness is key.

COMFORT UPRIGHTS

It should be no surprise that this is also the target market for the mainstream bicycle industry and their *comfort bikes*. Bikes intended for this market must be attractive, look modern, be durable, not too heavy and be affordably priced. The bicycle industry has done an excellent job of refining the common comfort/commuter bicycle. You can go into almost any bicycle shop in the country to see them. They cost \$300-\$500 and are outfitted with: comfy saddles, adjustable ergonomics, tough 26" wheels, durable cross tires, shocks, strong V-brakes, and easy shifting 21- or 24-speed drivetrains.

OUR DREAM \$1000 RECUMBENT

This new recumbent might have the following design features:

- Simple "one size" frame
- Low step over frame
- Low "rider-friendly" pedal height
- A comfortable sliding quick release seat
- 26"/20" wheel combo
- Basic 24-speed drivetrain
- Priced under \$1000
- Attractive mainstream looks
- Redefine recumbent marketing

I will explain each of the above features in detail:

Frame: While curvy-tube cruiser frames look great, the wonderful low step-over height of a design like the Burley Koosah is as good as it gets. Having the main tube slope upward towards the rear wheel is another good feature (seat higher for taller riders).

A carefully designed "one size-fits-most" frame should reduce production costs and work for most riders. Perhaps a second size if need be. At 6' tall, I can fit a standard Sun EZ1, EZ Sport or Burley Koosah just fine — I can't fit the standard RANS long wheelbase bikes.

Comfort uprights weigh 30-35 pounds. This should be our goal.

Lower Pedal Height: This needs to be the mainstay for entry level bikes. High pedals just are NOT as easy to master. There is that few seconds when you are lifting your feet up to the pedals, starting off and trying to achieve balance when you could have a problem. Also,

the higher foot position can cause foot/toe numbness for some riders.

One dealer reported that 90% of his recumbent sales are of low bottom bracket recumbent models. Perhaps this is an extreme example, but maybe it isn't. If this is the case, the higher the pedals are — the smaller the market will be. This means that his mid- and higher pedal recumbent sales share the other 10% of the two-wheel recumbent market!

I do not believe that all recumbents should have low pedals — just those intended to be rider-friendly bikes for recreational and urban riding. Serious enthusiasts are capable of making up their own minds what works best for them.

On a long wheelbase, the higher pedals can move the rider's center-of-gravity rearward and farther away from the controls. Both can be overcome in one way or another, but why jump through these hoops to sell fewer bikes?

Seat: Have you ever weighed a basic recumbent seat? They are very heavy. Most entry level/recreational recumbents won't be ridden 100 miles at a time. How about a simple high tech plastic or composite shell seat similar in shape to the old RANS bucket seat? This would make the bike simpler, lighter and more affordable. Perhaps a more comfy mesh seat could be sold at as an upgrade.

A sliding quick release seat is a MUST and it should lock down easily and not slip.

Wheels: The 26" rear wheel and 20" front really is the best all around recumbent wheel combination. While I like the 20"/16" set up because it's the most compact, it probably isn't ideal for a bike that will be looking for a big share in the mainstream market. Small wheels make the bike lower, have a rougher ride, accelerate faster, but they may not hold their speed as well. New riders may think small wheels look juvenile. The 26"/20" is the best compromise, at least on two wheel recumbents.

The trend of dual big wheels has come on strong over the past few seasons and while this is a more mainstream look, it makes the bike longer and arguably a bit less rider-friendly for recreational and urban riding.

Drivetrain: If you select carefully, you can create a drivetrain that works well and uses decent and affordable parts. Start with a common wide-range 24-speed drivetrain and an 11-32 cassette. Add to this some basic, but decent quality V-brakes and twist shifters (I don't like them, but they are industry standard).

Most recumbents are over-g geared. New rid-

ers on a 26"/20" recumbent do not need a road triple 30/42/52 crankset. These were designed to offer a lower hill climbing gear on drop bar racing bikes. A 35-40 pound recumbent is not a drop bar racing bike and we don't want new riders damaging their knees pushing roadie gears.

The perfect recumbent gearing is a touring style 24/36/46 or 48 triple crank (like a Sugino XD and even Shimano makes one) — which should be ideal for most riders. 170mm crank arms should be the default size, but shorter riders should consider shorter cranks.

Pedals are very important and not everybody needs a clipless/binding pedals. I recommend platform pedals if you ride in street shoes. Wellgo makes the Magnesium and Rivendell (www.rivbike.com) sells several MKS touring and "sneaker-friendly" pedals. With small alloy or plastic pedals, there is a danger that your feet can slip off the pedals.

Priced under \$1000: Even better, would be \$600-\$750.

Accessories: Allow clearance for wider tires (Schwalbe Big Apples), with fenders and racks — as well as adequate clearance between the crank and front tire/fender (an issue on several models).

Appearance: Pay attention to style. We don't need any new \$1000 recumbents that look like an hacked together contraptions with tubes going every which way — we need to find a style that sells.

Marketing: Many are trying way too hard to sell the recumbent racing image. More manufacturers need to sell *comfort* and *style* like Electra does with the Townie. When I see some fit racer guy in full lycra pitching me recumbents, it just turns me off. Imagine what it must do to non-cyclists. I recall a day when companies like ReBike, BikeE and Vision were out promoting recumbent cycling as a recreational sport. We need to get back to this.

CONCLUSION

In the last few years we've lost several recumbent makers who have been replaced by Internet distributors and direct sellers. (Is this a trend?) It is my theory that many entry level recumbent sales are now going to crank-forward bikes. We have lots of "comfort" competition in the bike market these days. Recumbents are still hard to find and expensive — while comfort bikes are lighter, more affordable and with many readily available styles.

The recumbent industry needs manufacturers who will champion the cause of affordable recumbents for average folks. I believe there is a huge untapped market for affordable and rider-friendly recumbents to sell to new enthusiasts or non-racers. With some nurturing, these same enthusiasts may become customers for the many light-weight, performance oriented and high-end recumbent models.

LAST MINUTE UPDATE

I started thinking about this topic last September after Interbike and wrote about it briefly for RCN 098. In the past few weeks I have heard about three or four upcoming models that may fit some of the criteria laid out here. Watch RCN and our blog for more info. Bacchetta has a new LWB coming. We have a photo on our blog (March 2007 archives).

NOTES

Short Wheelbase: At some point short wheelbase recumbents became less user-friendly as well. The trick to user-friendliness is the 16" front wheel. Gone are the 26"/16" Vision, Turner, Hyper-Cycle etc. with a lower pedal heights so shorter riders can actually ride a short wheelbase. What a novel concept this is. First generation R40 26"/16" Visions are actually sought after around here.

Trikes: This article deals with two-wheel recumbents. Trike designers seem to have a better handle on design standardization. This all could explain the rapid rise in the popularity of trikes. Also pedal height is not as much of an issue, and if it is, there are delta trikes. I do believe there is more to be done to develop more rider-friendly, lighter weight, more affordable and easier to set up delta and tadpole trikes.

RCN 100: We plan to write about more affordable ways to ride a recumbent: the Internet bargain bikes, a listing of sub \$1000 recumbents and even some homebuilder ideas and resources. ♦



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My Assault on Mt. Wilson

By Irwin Koransky

This is not a success story — but its not a failure either. Mt. Wilson is a premier landmark in Los Angeles. It is part of the San Gabriel Mountain range, with an elevation of 5710 feet (1742 meters). Mt. Wilson has been a major part of the history of Los Angeles. It was first explored around 1852 and now holds one of the major observatories in the country. The peak is easily identified by the many signal towers used by radio and television stations to transmit signals.

This mountain has been a favorite destination for cars, motorcycles, hikers and bicycles, and in the winter time, if we are lucky, there is sufficient snow for skiing. One main road, Angeles Crest Highway, allows easy access to the eighteen mile climb. Although I've been seriously riding road bikes for over fifteen years, and I love to climb, I'd never attempted Mt. Wilson. I've done the Solvang Century three times and anyone who knows LA knows there are plenty of places to climb, so I've reached many highs (and lows) during my upright riding days.

I don't climb well — never have. One concern I had about entering the recumbent world over three years ago was my ability to sustain a significant climb. With my Lightning Phantom and to a lesser degree, my Bacchetta Giro, I've conquered many hills. So it was with some trepidation that I decided to attempt, no, conquer Mt. Wilson.

One of my riding partners (I have not been able to convert anyone to bents — sorry) lives at the base of this formidable natural phenomenon. We selected a date and planned the ride. He invited two other friends of his, so I was now forced to ride with three upright bikes and I was afraid I would look bad. Actually, I climb better than my friend, but still . . .

I decided on the Giro because it's performed well on some minor climbs. My Giro is a yellow 2007 model with has Velocity Thracian rims, a Euromesh seat, titanium Egg Beater pedals and with the accessories, still comes in at around 32 pounds. The bike is also set up with an 11-32 9-speed cogset and the original Truvativ Elita 30/42/52 crankset. It was originally a green 2004 model, but I had some issues with one of the rear brake bosses on the chainstay and sent the bike back to Bacchetta. The frame with eventually replaced with the new 2007 yellow frame.

I originally had a Recurve seat, but opted for the Euromesh to save weight. I am a weight weenie, I admit, a holdover from my roadie days. The Euromesh seat is quite comfortable and for day rides, with no real hills, it suits me fine, although I have found even a few hills, lately, have caused me some butt pain, as I will explain later.



Irwin and his yellow Bacchetta Giro with friend Donn Sarbaum on his Coppi at Mt. Wilson

We started at the base at about 8 am. The weather was clear, sunny and brisk at about 60°. The elevation sign just above the base read 2000 feet. There were some significant grades early and I was assured it would get worse.

One major hazard was, as always, the traffic. Cars moved along quickly, but the constant roar of sporty motorcycles was downright scary. These guys are all going around turns as if to see how fast they could go before skidding out. We were also passed by younger upright riders. I don't really care about them, but I couldn't even keep up with one in our group, who is seventy years old.

There were only a few areas where the road either leveled off or actually turned down. I rode straight for over one hour before stopping for a few minutes. My fear was that if I'd gotten off before I reached the top, I'd never get back on again. The whole trip was about eighteen miles, which does not sound like a lot, but its over a three thousand foot climb. After two hours, I'd had it, partly because I didn't figure on how long this would take. I still had to ride back to my starting point, and then drive home.

By ninety minutes, I was getting very sore in my butt area, where it was resting on the foam of the euromesh seat. My knees were sort of okay, minor pain, but my butt was killing me. So, I quit.

I still had about seven miles to go, and with another very steep climb about three miles from the top. I have never quit in the course of a ride before, but this time I realized I would be in trouble for the return, due to the pain developing and I didn't think it was worth it to continue just to prove something. At 64, I don't have to prove anything to anyone.

My friend turned around with me. Just be-

fore we turned around, a car stopped, lost. We gave them directions, and asked them to take the picture you see here. We are at about 4,000 feet. We then headed back.

I essentially coasted back the ten miles, in approximately thirty minutes. Because of the grades, the turns and my soreness, I didn't want to push the return.

So, I was not successful in my first attempt and I will try again, but I learned several things. First, the giro can climb, but not without me providing significant support. What that means, of course, is that we all hear talk of how well this bike climbs or that one does not, but really, bikes don't move unless someone is pushing the thing. Second, I need to train better and ride more. I have been riding for many years, and I go out almost every weekend. I have climbed a lot of hills, but not lately. My riding has decreased both in time and intensity.


I also learned I need to manage my time better. If I'd have left earlier (they wanted to leave at 8 am. I would have left at 7 am, stopped and rested more, I probably would have made it to the top.

Finally, the bike set up. I probably got sore because the Euromesh seat was set too high (according to Dana at Bent Up Cycles). I set the seat high, so I get the leverage to push and climb, like I do on my Lightning Phantom. The problem is if you set the seat back more, you lose some of that leverage, so I don't think the seat is really designed for strenuous, sustained climbs. There is nothing wrong with the design, only my purpose. I use Continental Grand prix 1" by either 406 or 559, so the tires are thin enough to reduce road drag.

The next time, and there will be a next time, I will train better, plan better and use a different bike. All in all, I was not disappointed with myself, was pleased I got as far as I did and I got a major workout. It was a great ride and the view at 4000 ft of a sunny L.A. is spectacular.

Update: Since the article was written, I have sold my Bacchetta Giro and purchased a RANS V-Rex that I had built up from a frameset by Bent Up Cycles. I find the seat position of the V-Rex more comfortable and I seem to climb better than on the Giro.

I also have my Lightning Phantom which has been upgraded significantly. I changed the 16" inch wheel to a 20" with matching Velocity Thracian wheels. I've also changed out the stock fork to a P-38 fork. ♦



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