

RCN Reader Road Test

Lightning F-40, Magic Bike Brings New Dimension to Cycling

by Zach Kaplan



WELCOME ABOARD THE LIGHTNING F-40

As you walk up to the bright yellow airplane fuselage shaped F-40 you note it looks like it is moving fast standing still. The left side of the fiberglass and fabric fuselage is zipped open. You enter this human powered vehicle, standing over it while putting your right foot through the right foot slot. Now sitting down on the tensioned mesh over aluminum frame seat, you swing your left leg through the door and drop your foot through the slot. The matte black anodized handlebar with down turned ends sits in front of you like a control on an airplane. You practice picking up your foot and putting it back through the foot slot to get a feel for it before taking off, now again with the right foot. You note those slots are exactly in the right spot and it doesn't take any concentration to lower the "landing gear."

With your left hand you pop the spring loaded side wind tube into position. This tube runs between the seat and nose fairing. Then you quickly zip up the side zipper and are now almost ready for takeoff. You taxi over to the starting line, a one finger application of the hydraulic brake lever stopping the front wheel precisely at the line. Reaching into the "glove compartment" on the right wind tube, you pull out a special yellow tinted pair of glasses, as conditions are foggy. While positioning the glasses under your helmet, you simultaneously flip a small toggle switch on the handlebar which activates a 45 watt quartz-halogen light located behind a polycarbonate window smoothly integrated into the front of the fairing. A vertical tube on the tail also becomes illuminated by 9 high powered light emitting diodes. You casually take a sip of energy drink

from a tube conveniently located near your face. You zero the odometer with its heads up display located in front of your face. The heart rate transmitter must be working as you note the pulse reading on the heart rate monitor located next to the speedometer is increasing.

The official standing next to you with the two way radio says you are almost clear for takeoff. As the countdown begins, you lower the pivoting polycarbonate windscreen into position in front of your face. Clear for takeoff now, you raise one foot to the pedal and click in, pushing off while releasing the brake. After half a revolution of the crankset, the other foot is brought in and engaged to the pedal. Not fully warmed up, you take the first half of the 600 meters easy, gradually increasing the power output level. You note 25 mph comes up fairly quickly with little effort. That type of speed would really take some exertion on an upright bike or even on most unfaired recumbents. The orange pylons of the timed 200 meter area are spotted off in the distance. Now you start hammering. The numbers on the digital display start increasing 50, 55, 60, 65 km/h. As the HRM indicates 190 beats per minute and increasing you enter the timed area. All you can hear is a gentle hissing of the wind passing around the fairing and the low rumble of the high pressure tires on the tarmac. Near the end of the timed 200 meter stretch, your speed is still increasing. After a cool down, you make a tight U-turn in one lane and return to the timed area, barely pedaling at 21.7 mph. An IHPVA official says you averaged 41.7 mph through the timing trap.

While cruising back to the starting area, you note that you are essentially an average commuting-touring cyclist of rather low power

output yet you have gone significantly faster than most road racers on UCI bikes can go, and with none of the pain and all the comforts of home along for the ride. A more powerful rider could have gone faster. At the starting line you see just such a rider being lowered into a low slung hard bodied machine, team mates scrambling with duct tape to seal the rider into the fairing. Even though that vehicle is faster in a straight line, how practical could it really be if you can't operate it on the road like the vehicle you are sitting in. The sun is now out and a group of spectators on unfaired recumbent bikes are busy applying sun screen to their arms and legs. You smugly take another sip from your drink tube, glad the vehicle you are piloting provides almost complete protection from ultraviolet radiation.

The above story is a composite of several events which I actually experienced on different occasions while riding an F-40. It is all based on reality.

THE MAN BEHIND THE BIKE

Any similarity to an aircraft is not coincidental. The owner of Lightning, Tim Brummer is an aerospace engineer. He formerly worked with rockets and now runs Lightning Cycle Dynamics. He has been working with human powered vehicles since 1977 when he helped design and build the record setting White Lightning as a college project.

With little previous design information to go on, an unable to obtain funding for human powered vehicle research, Lightning designer, Tim Brummer, has done most of his research himself. The production Lightnings have
Continued on page 19.

undergone continuous refinement over the past ten years. (see RCN #15, Lightning P-38 Design History). He has a clear vision of what a practical hpv is and is gifted with the skills to make it a reality.

F-40 PRACTICALITY

I tested the F-40 with an eye towards practicality in every day situations. In the course of testing I have entered countless centuries on the F-40, done a double century, used it for my primary transportation to and from work and for shopping (I don't own a car), taken it on the BART train system in the San Francisco area, taken it into elevators, carried it up three flights of stairs daily, regularly ridden it through the dense traffic and hills of San Francisco, used it for touring, and entered it in the 20th Human Powered Vehicle Speed Championships in Eureka, California. The bike has worked out most favorably in these situations. The F-40 meets my practical transportation needs better than any other bicycle in its price range or below while simultaneously providing the most fun and smiles per hour.

The F-40 is actually an integrated fairing package which fits onto the P-38 frame (see RCN #7 P-38 Road Test). The P-38 is a medium wheelbase (a longer SWB) recumbent which makes it an ideal platform for a fully faired vehicle due to its excellent weight distribution and high speed stability. The triangulated space frame of the P-38 is quite resistant to flex under hard pedaling. This combined with the fairly high bottom bracket and the angle of the seat back give the bike excellent hill climbing and acceleration abilities. I regularly pass roadies on surprisingly steep grades. The tensioned mesh seat back over a contoured aluminum frame is patented and is recognized by recumbent enthusiasts as being one of the most comfortable in the business. On a 372 mile ride I only got off the bike a few times and it wasn't because of the seat! I couldn't have ridden that far on an upright bike and it would have been difficult even on most other recumbents.

The fairing is better integrated than any other fairing package I have seen on a bicycle. It is relatively easy to get in and out, and once practiced very easy to get my feet through the foot slots for stopping and starting in traffic. Some stops need to be anticipated sooner than on an unfaired bike, such as when stopping on an uphill or when riding in dense stop-and-go traffic. In these situations I generally unclip one foot and sometimes stick it out of the slot long before I actually need to stop, pedaling with the other foot, very steep hills with a stop sign at the top are also difficult. Knowing where such intersections are, I generally avoid them. Operating the F-40 requires perhaps more thought and advanced planning than with other bicycles. This is a thinking person's machine, which is fine with me since it adds to the fun. Once you get out of the hilly high traffic areas, the concentration level required for stopping and starting greatly decreases. In fact, in level ground traffic, stopping has become second nature and I rarely give thought to it.

The test bike has the fluorescent yellow stretch Gortex fairing (rather than the stock spandex). With this setup, the optional mudguards, and a helmet cover I am able to stay almost completely dry in the rain. The fairing



Zach installing his F-40 Gortex body.

kept me warm on cold days, no need for winter gloves or shoe warmers on this bike! People assume that the bike must be a rolling sauna on warm days. For some people it can be, but most people who have ridden F-40s, myself included don't find it much hotter on a hot day than an unfaired bike. There is plenty of flow through ventilation at the speeds the F-40 operates at. Air comes in through the front wheel opening. By opening the zipper on the top of the fairing flow through ventilation can be achieved. When going up long grades, the door zipper can be opened. Some F-40 riders on the east coast have installed a second set of zippers on the right side to further improve ventilation in warm, humid conditions. Cruising on level ground on a hot, sunny day, an F-40 with a light colored fairing can also be cooler than an unfaired bike because it is like carrying your own personal shade trees with you. The fairing acts as a sun shade. This brings me up to another important F-40 advantage- no need to apply sunscreen anywhere but your face and neck.

A veteran F-40 rider who recently switched from the spandex to the Gortex fairing cover told me the Gortex is much hotter than the spandex and harder to keep clean. He said the regular spandex still keeps the rider fairly dry in the rain. As well as costing \$120 more the Gortex fairing weighs about one pound more than the spandex. Standard on all F-40 fairings this year is the side wind tube kit. It prevents the mid-section of the fairing from blowing inwards in side winds. The left aluminum tube is spring loaded and opens for getting in and out. I found it desirable to run with the wind tubes in at all times. I know of three F-40 riders who have installed coroplast panels under the mid sections of their bikes with similar speed advantages combined with low cost and easy installation and removal for special events.

The fairing had another unexpected advantage- privacy. While motorists and other cyclists can see your head, that's all they can see. In true aircraft fashion, I installed an onboard toilet using one of the sets of bottle braze-ons beneath the seat. This turns out to be a great convenience and time saver when randonneur touring and doing century type rides. No more waiting in long lines to use a filthy outhouse. No more laying the bike down in the dirt by the side of the road and getting your cleats dirty trying to find some trees.

Two windscreens are available, the standard short almost vertical one and a long aerodynamically sloping one for racing which pivots forward. It is possible to interchange the short windscreen back and forth with the long one by removing a quick-disconnect pin if you order that option. The short windscreen provides fairly decent facial protection from the wind and bugs. Most bike fairings don't provide any facial protection and when I removed the short windscreen I noticed a dramatic increase in wind noise and dry eyes. Putting on the long windscreen is a major step up in comfort from the short one. With this I felt virtually no wind on my face and the ride became eerily quiet. When going up hills, the long windscreen can be pivoted forward providing excellent ventilation. With all the fabric on the fairing, road noise is muffled giving the F-40 a lower cockpit noise level than any other bike I have ridden. People outside the bike will disagree however. From the perspective of a pedestrian or other bicyclist an F-40 passing by makes a deep rumbling thunder-like noise. I put RainX on the outside of the windscreens and anti-fog on the inside. This combination works fairly well but the windscreens still fog up under certain conditions such as when stopping on a rainy or foggy day or going up a long hill on a cold day. The knock against the long windscreen is that it is more prone to fogging than the short one, must be pivoted forwards for getting in and out of the bike, adds 6.6 oz., and may require modification of your helmet mirror to provide adequate clearance. Never the less, I prefer to run with the long windscreen for the added comfort and speed.

An interesting and useful feature of the windscreen mount is the short horizontal tube located at the base of the windscreen. This tube is just long enough to mount one cycle computer and one heart rate monitor, and it places them high up at eye level, directly in the rider's field of vision. This is the closest thing to a heads up display on a bike that we are going to see for a while. No more peering at computers through zippers or having to take your eyes off the road. Being the information junkie that I am, I selected a combination of computers which display seven lines of information to me simultaneously. Hey, that's better than most car instrumentation- who needs a car!

There is plenty of room behind the seat for mounting a rack and panniers. When touring the panniers can't be overstuffed due to tight fairing clearance but plenty of stuff can be piled above them in the tail fairing without needing

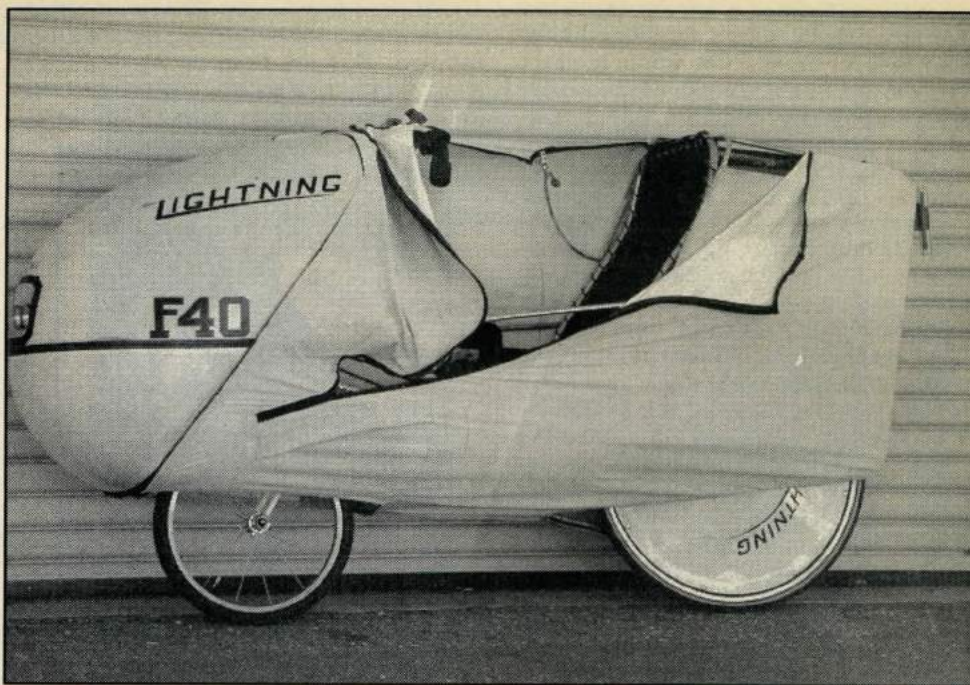
to strap it down for fear of it falling out onto the road. The sleeping bag and tent can be strapped in the space under the seat. The bike is no less aerodynamic fully loaded than unloaded, making it an ideal touring bike. Daily distances can be dramatically increased while simultaneously increasing the comfort level and reducing the fatigue level. Imagine riding into a headwind all day at speeds faster than you can cruise on an unfaired bike with a tail wind. The noise reduction of the fairing and windscreens is greatly appreciated when touring.

Last but not least, an important component of the F-40s practicality lies in its tremendous speed advantage. Lightning claims the bike is 40% faster than a standard UCI roadbike. I generally found that to be true on level ground, sometimes more sometimes less depending on wind conditions and my power output level. The more powerful the rider, the greater a speed advantage an F-40 has. For someone like me who doesn't own a car, the speed advantage is an extremely practical feature. I am able to extend my daily range significantly. This is an area most other practical HPVs don't address nearly as well as an F-40.

I found the F-40 to be faster than a good light road bike up to about a 5% grade. At that point it levels out due to the added mass. When the speed drops below approximately 10 mph the F-40 doesn't have any real aerodynamic advantage so it is desirable to save your power for the uphill to try to keep the speed above this break even point. You can really take it easy on the down hills, easily coasting by roadbikers who are pedaling away furiously. On long, steep grades some of the stronger roadies pass me at a fairly low speed differential. However I generally pass them again on the downhills within 5 minutes. If the downhill is particularly treacherous and the maximum speed potential can not be realized, I am unable to catch the roadies on the downhill. As soon as the road flattens out I just sail right by at a tremendous speed differential. The F-40 is really in its element on rolling hills. In such conditions I can pedal down the hills getting up to extremely high speeds and use the momentum to fly past all the light road bikes on the up-grade. I frequently can crest such a hill still doing 31+ mph passing by people on road bikes who are standing on the pedals giving it all they're worth doing under 15 9.3 mph. It is at times like this that I feel I am really riding a magic easy chair. Moments like this make all the disadvantages of the F-40 worth while.

CERTIFICATION NEEDED FOR OPERATION

Tim Brummer admits the F-40 is not suitable for the average cyclist and I agree. He interviews all interested F-40 customers to make sure the bike is appropriate for them, and to help make sure they can handle the incredible performance. Many F-40 riders have experience riding high performance motorcycles, flying airplanes, and/or with light sailboats. This type of experience makes riding an F-40 much easier. Tim recommends at the very least, one year and



Zach and his F-40-Article photo's by Zach Kaplan

5000 miles of riding a high performance road bikes or recumbents, preferably with some racing experience. There have actually been a couple of cases where he would not sell the fairing to people he did not think were qualified.

The F-40 comes with an extensive owner's manual which is required reading prior to putting the F-40 into service. It has useful tips for dealing with cross winds and high speed down hills. According to the owner's manual, the F-40 can be ridden in steady cross winds of 20-25 mph and gusty wind conditions of 15-20 mph. I am a fairly light weight rider and found my comfort level to be at the lower end of these wind speeds. When the wind speed exceeds the safe limits, the spandex covering can be removed in under a minute. For temporary gusty conditions the fabric need not be fully removed. The front portion can be unvelcroed from the fiber glass fairing and stowed behind and under the seat. When riding in this configuration, the bike handles almost as well as with no fairing at all.

It took me several months of riding to feel comfortable in gusty wind conditions. Tim admits the F-40 has a fairly slow learning curve though it easier to ride than a hard bodied streamliner in windy conditions. My speeds gradually increased in such conditions as my reflexes improved. Leaning into the wind has added a whole new dimension of fun to cycling, using the fairing as a sail.

SAFETY

If ridden appropriately the F-40 is potentially safer than either an upright bike or unfaired recumbent. It has the low center of gravity and feet first position advantages of other recumbents in addition to some other passive safety features. When ordered in the bright yellow color the F-40 is more visible on the road than any other production bicycle. The large

surface area of the fairing and the bright color make it far more visible to motorists than the average "stick figure" bicycle. The thin fiberglass nose fairing can flex quite a lot before breaking, providing some frontal collision protection. The pedestrians you may hit will also appreciate the blunt front fairing shape as opposed to the lethal chainrings found on the front of many recumbents. Incidentally, any time you lay an F-40 down while in motion, there is going to be some fairing damage. All F-40s have a window in the front fairing to mount a headlight behind. The test bike was equipped with an extremely bright Nightsun Max system which includes a large nine LED tail light on the rear fairing which is so bright that it illuminates the white lines on the road and the backs of road signs. The test bike was also equipped with a strip of 3M tape running vertically from the top to bottom of the tail. An awe struck motorist who passed me at night described the rear of the bike as "glowing."

The F-40 can also be more dangerous than an unfaired bike. When sitting in the bike surrounded by the fairing one tends to feel protected and thus may take greater risks. According to Tim people who crash on F-40s generally do so because they are going too fast for conditions. It is easy to forget you are connected to the road by just two narrow bicycle tires. Any kind of moderate down grade will get the F-40 up to highway speeds, and unless conditions are optimal and the road is known, the use of the brakes to keep the speed reasonable is advised.

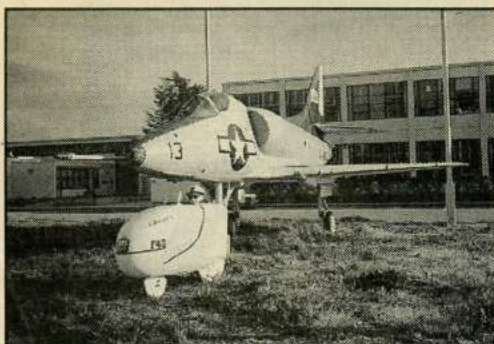
After riding the F-40 about four months I had become more confident in windy conditions, perhaps overconfident. While out testing the handling on an extremely windy day, I came to a long fairly straight stretch of road. With the strong tailwind at my back, I cruised for about 9.3 miles at speeds of 34-40 mph.

I was feeling really great and on top of things when suddenly the wind shifted direction. It started blowing hard from the left. I leaned into the wind as hard as I could but the bike was still heading over to the shoulder of the road, so I applied the brakes. The shoulder of the road was coming up too fast, so I applied the brakes harder. I didn't realize how much lift the wind was creating. The tires were lightly loaded as a result and I went into a two wheeled skid for 18.3 feet. I didn't realize both wheels were locked up at the time but later on I measured the skid marks left by the front and rear wheels. The skid marks stopped at the edge of the shoulder where the bike jumped a curb and landed in a field beside the road. I climbed out of the head hole like an alien emerging from a crashed UFO. Miraculously I was uninjured and aside from mud all over the side of the fairing the only damage to the bike was two small tears in the fabric and a small scratch on the widest part of the fairing. I learned how to sew in the course of patching the tears and also how to buff a scratch out of fiber glass. The most important learning experience was finding out where the limits of the handling were.

RELIABILITY

I initially took delivery of the bike in Lompoc and rode it with a full touring load up the coast to San Francisco. I noticed the front suspension was not very responsive as it seemed to be sticking. Tim said it might take some riding for it to loosen up. Upon arriving in San Francisco the suspension was still rather nonfunctional. I called up Tim and he said the machine shop

which machines the fork parts had machined some parts to the wrong tolerances. Within two weeks another fork was sent to me. The new fork worked fine immediately, though not as responsive to the small bumps as I had hoped for. The fork responded mostly to the larger bumps, potholes and driveway edges, but these



are exactly the areas where suspension is really needed. After several hundred miles, I began to notice some lateral play in the fork. It turned out the slider tube had loosened up within the fork crown. I was given one of the new generation forks with a longer slider tube and improved seals. The newest fork is much more responsive to small bumps and hasn't given me any more problems.

While inspecting the original defective fork, I observed a hairline crack in the head tube of the bike frame. I was surprised as I only had the bike two weeks at that time. I called up Tim and told him the frame was defective. We de-

termined that the crack was small enough that it would still be safe to ride the bike while waiting for a new frame. The new frame has held up well.

The wheels were another low point of the F-40. The front wheel, which had just 14 spokes, suffered from loosening spokes on the tour up the coast. I don't think the problem was the low spoke count although that exacerbated the problem once the spokes started loosening. The reason why they were loosening in the first place was the spokes were not tensioned properly. An expert wheel builder uniformly tensioned the 14 spokes to high tension and the wheel has stayed true ever since. The rear wheel also went out of true on the initial tour and has never really been able to stay true since. As a result of the wheel problems, all the rear wheels are now being built by Wheelsmith.

COMPONENT SELECTION

Component selection has never been one of Lightning's strong points, and while the components are better than those of the P-38, there are still a few substandard parts for a bike this great. While it would be nice to have all the right components on in the first place, when you are spending this much money you probably have your own ideas of what components you want.

The highlight of the component selection is the powerful IBC hydraulic brakes. These have better modulation than any brake around.

The half-step gearing provides a good selection of closely spaced gears. I found the 28-32 first gear too high for the San Francisco hills so I installed a 24 tooth chainring which provides an adequate low. Later on this was

"ANGLETECH"

COUNTERPOINT



PRESTO

RECUMBENT

"The Best SWB recumbent of 1994."

Recumbent Cyclist

NEW!

RANS
V-REX
ANGLETECH SPECIFICATION
V-REX SS & V-REX GL63

Send \$2.00
For Catalog

PRESTO SE63: 63-speed range from a 19 to a 139 inch gear.
PRESTO Ti: Full Titanium frame plus Full Titanium fork.
ANGLETECH/ZIPPER FAIRING: PRESTO & OPUS
Optional Zipper integrated body stocking also available.
TRIO triple seater tridem!!!
PRESTO TRIAD TRICYCLE!!!
Retrofitable PRESTO Titanium or suspended front forks available

YOUR DREAM IS OUR COMMAND!



"ANGLETECH"

P.O. Box 1893 318 N. Highway 67
Woodland Park, CO. 80866
719.687.7475 800.793.3038

"BIKE TECHNOLOGY FROM A DIFFERENT ANGLE."



OPUS IV

TANDEM

We also feature:
RANS, Linear folding SWB,
RYAN Vanguard & Duplex!

Custom refurbishing &
modification including
painting, powdercoating,
brazing and much more!

replaced by a custom elliptical Climb Control chainring from OHO Designs which greatly improved hill climbing and traction on steep grades at the expense of needing to do some major modifications to the front derailleur to enable it to shift from what was effectively a 22 tooth gear to a 50 to a 54.

The 125mm Suntour Grease Guard bottom bracket provided marginal foot-fairing clearance so I traded it for a narrower one. Because of this incident, the F-40 specification now calls for a 120mm Ritchey bottom bracket. Tim is responsive to customer complaints if the complaints are valid.

Shimano doesn't make an 11-32 Hyperglide cassette, so regrettably the F-40 uses an 11 tooth Hyperglide cog with the rest being the older style non-gated SIS.

I consider the Suntour SL headset cheap garbage, but for this application Tim continues to use it because the headset in an F-40 leads an easy life due to the front suspension and the fairing preventing dirty water from getting sprayed all over the headset. Never-the-less, I consider headsets which require headset wrenches archaic, so I chucked the SL and installed an American Classic headset which tightens down with an allen wrench.

THE NEXT GENERATION

Most of my complaints about the F-40 will be addressed by the soon to go into production R-84/ F-86 series. These are the new carbon fiber versions of the P-38 and F-40. The frame has the same geometry and wheelbase for the same good handling, but this is not simply a different frame on the same bike.

In addition to the carbon fiber box section frame, a lighter handlebar and seat frame will be used. The fork blades will be made of a higher grade steel and have a unicrown design to reduce weight. The 1 1/4" steerer tube will be made of aluminum to further reduce weight. The larger diameter steerer

enables elastomers to be used instead of springs decreasing the weight and increasing responsiveness to small bumps. The new bike will use aluminum bolts and screws in all the places the F-40 uses steel. Even the chain idlers will be lightened up. These improvements will knock 5 pounds off the frame kit alone.



Zach on the road. All photos in this article courtesy of Zach Kaplan

The F-86 will have suspension on the rear which will greatly improve high speed cornering, rough road handling, and comfort.

The seat height of the F-86 will be 2 inches lower than that of the F-40, enabling a lower fairing to be used. This way the rider won't have as much frontal area and the reduction in side area will give somewhat of an improvement in side wind stability. The smaller size of the fairing also means less material is needed, thus the fairing will weigh less.

The F-86 fairing will have quick release mounts and should be able to come completely off the bike in under two minutes. This will greatly increase the versatility of the bike for those days when you actually want

to work hard when riding with the club riders.

The F-40 is an excellent bike which has exceeded my expectations in most respects. It is a good all purpose bike, perhaps the ultimate commute-touring bike for areas where it rains instead of snows. It is worthy of keeping in my personal transportation fleet for such purposes, but I will begin testing an F-86 at the end of 1994.

THUMBS UP!

Very fast by bicycle standards
Excellent weather protection
Practical for commuting/ touring
Highly visible in traffic
High fun factor

THUMBS DOWN!

Sensitive to cross winds
Heavy by road bike standards
Could use rear suspension
Quality control needs improving
Some sub-standard components for cost
Expensive

F-40 SPECIFICATIONS:

Base Price: \$4200.
Price as tested: \$5217
Frame: brazed CrMo space frame with aluminum seat frame/ handlebars
Fairing: fiberglass nose, alum. tubed Dacron covered tail frame, spandexmid section
Weight as tested in keep up with roadies on hills configuration (spandex fairing, no wheel covers, side wind tubes removed): 33 pounds.
Weight as tested in full commuting-touring configuration (Gortex fairing, f+r wheelcovers, side wind tubes, rear rack, f+r mudguards, Nightsun light system, battery, glove compartment, seat bag, and skid plates) 41 pounds.
Wheelbase: 44 inches.
Head angle: 71.5 degrees
Bottom bracket height: 23.25 inches.
Seat height: 19 inches.
Overall length: 84 inches
Total width: 20.5 inches.
Total height with windscreen: 49 in.
Gear Inch Range: 20-133
Brakes: Innovative Bicycle Components (IBC) hydraulic with custom bent hand levers
Wheels: Front- Sun M17L, 14" or 16 spokes, radial lacing, 14 gauge, Shimano Dura Ace hub. Rear- Sun M13L rim, 32" or 36 spokes, 3 cross lacing, 14 gauge, modified Shimano Dura Ace hub with 11-32 HG-SIS cassette.
Tires: Front- Wolber 17x1 1/4. Rear- 700x25.
Derailleurs: Suntour XC Pro
Shifters: SRAM Gripshift CX-DT bar end
Crankset: Suntour XC LTD 28/50/54 standard.
Pedals: Onza H.O. or pedals deleted.
Headset: Suntour SL

Are you a recumbent manufacturer?

RCN is currently compiling recumbent bicycle information for the 1995 season. If you are a recumbent manufacturer, dealer or related business and you ARE interested in having your products featured in the RCN season kick-off issue or you would like to be listed on our database to be contacted for the RCN 1995 buyers guide issue, please write RCN ASAP. Here is a list of what we will need:

- ☐ Your 1995 or current brochure/ presskit.
- ☐ Model, spec and component info.
- ☐ Black & white side view photos of your bike. (color will work in some cases)
- ☐ Product availability info.
- ☐ 1995 Pricing info

Details are still being worked out for the 1995 guide and we will contact only those manufacturers who contact us from this ad. Send Info to: RCN, PO Box 58755, Renton, WA 98058