

Reader Review—The Lightning P-38

Story and photos by Nick Fessler

I vividly remember the first century I rode on my Lightning. I had ridden only 600 miles in training, so I was more concerned about finishing than going fast. But I still did pretty well while riding much of the time by myself. At the SAG stop about the 70-mile point, I talked to some guys who were interested in recumbents, though they didn't ride them themselves. They learned that I had switched to recumbent riding because of prostate problems associated with bicycle saddles and that I had been a respectable upright rider with 19 centuries under my belt.

Unbeknownst to me, their intention became to catch me (I had left the SAG first) and then to see how fast I could go. Catch me they did at the top of a short hill about the 90 mile mark, and I joined the back of their three bike paceline. They were glad I did because they then cranked up the speed and we rolled at over 20 mph (with a friendly tailwind) all the way home. I was ecstatic! With relatively little training I really impressed these fellows from Cincinnati who had never before seen a recumbent do more than 20 mph.

Before going any further, let me be perfectly honest. A Lightning is really the only recumbent I have ever ridden. I will make no comparisons to other bikes because I can't; what I can comment upon is the experience I have had in riding my Lightning P-38 about 4,800 miles in the last sixteen months.

Why I Purchased A Lightning

I ordered and received my Lightning during the summer of 1994. I am fairly young, still feeling my oats, and wanted a bike that would allow me to go fast. Speed was my primary consideration when making my purchase decision. The only two bikes I considered were Lightning and Easy Racer products. I preferred the lower weight and smaller size of the medium wheelbase P-38; ultimately I was seduced by the speed of the F-40/F-86 (fully faired versions of the P-38 and the carbon fiber R-84, respectively).

Another reason why I chose the P-38 is its climbing ability. The P-38 has the reputation of being one of the better climbing recumbents in the industry due to its shorter wheelbase and higher bottom bracket. I was concerned about climbing ability because I live in south-central Indiana where the two local rides are called the Hoosier Hills Tour and the Hilly Hundred; finding flat land can be a challenge in this part of the country. None of the hills are very long, but they can sure be steep! After agonizing over the purchase decision, I made my choice and was still wondering what life would have been like if I had made the other choice when I rode that century. I am now convinced that if you are looking for a speedy recumbent, the Lightning is one of bikes you need to consider.

The Bike

The P-38 is a beautifully crafted machine with a custom-designed front fork, handlebars, and seat. The Lightning P-38 design utilizes what is



known as a space frame; think of it as a three-dimensional structure providing stiffness in all the right places not possible with more conventional designs. The other manufacturer of space frames I am familiar with is the Moulton bicycle that is the source of the 17" front wheel which can be used on a Lightning. The space frame makes the Lightning a very efficient machine front to rear, meaning that all energy put into the pedals is transmitted to the rear wheel. There is almost no lost energy through frame flex. The P-38 is less stiff from side to side; you will notice this as you turn the handlebars very quickly from side to side and make the front end "flop" a little bit. I don't notice this phenomenon except when I try to make it happen, but it is the reason why Lightning doesn't suggest loading more than 50 pounds on a rear rack.

The seat is among the most comfortable of recumbent seats. It is adjustable and has a foam pad on an otherwise all-mesh seat that connects to the aluminum frame by wound string. The mesh provides breathability. There are two strings that connect the seat to the aluminum seat frame: the first goes from the top of the chair back to the middle of the seat bottom while the second one continues to the very front of the seat. I have the second string—the one to the front edge of the seat under my thighs—very tight. The string under the seat back is relatively loose but the seat-back is tight. This gives me a firm platform to push against with my back and provides a bit of a "hole" to sit in that conforms perfectly to my hip bones. Ahah! An adjustable recline seat is now available from Lightning for those of you who are not fond of the very upright position. The seat stays telescope to allow a more reclined pedaling position.

The Lightning is considered a medium wheelbase recumbent: the front wheel is located

behind and almost under the bottom bracket. The MWB on the P-38 provides very good weight distribution between the wheels (55% rear, 45% front) and good high speed stability. However, this performance is at the expense of some low speed maneuverability and heel interference. Even so, the bike is very maneuverable and can be turned around on a narrow two-lane road, but the first few times I suggest doing this with the inside foot unclipped. It is possible to hit your heel on the front wheel. After a little practice this ceases to be a bother, but I have on occasion hit the front tire with my heel, once with enough force to take the steering out of alignment. The fairly steep angle of the head tube and fork cause the Lightning to have criterium-quick steering. But with practice you become quite comfortable with the quick steering and your control of the bike becomes second nature.

The handlebar is adjusted by raising and lowering it so that it just clears your knees, though I have mine about two inches higher than the tops of my knees so I make sure that I don't hit my knees. Available from Lightning is a small Zzipper fairing that mounts to the handlebars. Available directly from Zzipper is a much larger fairing that mounts to the bottom bracket. This bigger fairing improves performance on the flats though it weighs more than four pounds more than the small handlebar-mounted fairing and costs more; you will have to decide if the additional cost and weight are worth the performance bonus. I am saving my money for an F-40 body which can be added to the P-38. The distance from the seat to the pedals is adjusted by loosening two allen bolts on the boom at the front of the bike and moving the crank in and out. This method allows micro-adjustments for a perfect bike fit, but may sometimes also require that chain links be added or removed. This is a problem if more than one person will be riding the bike.



Riding A Lightning

Lightning bikes put the rider in what is described as an "extreme" position. The rider is more upright (less reclined) than on many other recumbents and must reach pedals that are above the rider's hips; position is more "closed" than most other recumbent designs. I think this is a very powerful pedaling position, though many readers would debate this statement. The Lightning puts the rider in a position roughly equivalent to an upright rider with hands on the drops, with the added benefit of having a seat back to push against when pedaling. The position gives me the ability to use all the muscles in my legs, as opposed to just some of them (e.g., the quads). I guarantee that Lightning newbies will discover muscles that they have never used before; Lightnings are probably the source of the condition fondly referred to as "recumbent butt." My gluteus muscles (I very unsophisticatedly think of them as my butt muscles) are still the first muscles that get sore on rides, and having cramps in those muscles is a very memorable experience (I've done it three times). The first time both cheeks practically froze up and I could hardly walk, much less ride. Thankfully I had just arrived home when it happened. Even worse, when those butt muscles get sore you are sitting on them, which aggravates the problem. With training these muscle problems definitely improve, and I expect them to go away someday.

The extreme position does take some time before it becomes comfortable; your feet are pretty high off the ground when you are clipped in and pedaling. On more than one occasion I have unclipped one foot and tipped over the other way. Ooops! Bike fit on recumbents is very important because you are stuck in one position for all of your riding; recumbent riders cannot stand and stretch their legs. I eventually asked a local bike shop to help me set the pedals at the correct distance. I also had a doctor measure the difference

in the length of my legs and I now use a 170 mm crankarm on the left and a 175 mm crankarm on the right to compensate for leg length differences. Using different crankarm lengths has made a world of difference, though it took getting used too.

The steering of the P-38 is very quick. I discovered this when riding down a residential street and I needed to quickly dodge a hole along the right side of the road; my maneuver, which would have moved me but a foot or so on my upright bike, put me in the other lane on my Lightning. Thankfully there wasn't a car coming! Just relax and use your back against the seat to stabilize the bike. Because you are relatively low to the ground, you must be very careful about seeing and missing holes and rough spots in the road ahead of you. I find this still to be a problem; I am looking so far down the road that I too often miss the obstacles that are right in front of me. This can be hard on wheels, though I am fortunate that it hasn't caused a wreck.

I have found that a fast cadence is the way to go, both going uphill and going fast. I constantly monitor my cadence and always try to pedal faster than 100 rpm; less than that is actually beginning to feel slow though I still don't get my cadence above 130 rpm. The best way I have found to sprint and/or rapidly accelerate is to wind up your cadence and then shift through the gears. On up-hills a fast cadence will help save your knees as the Lightning position enables you to put a lot of torque into your pedal stroke when you want. Stay on top of your cadence; if you lose it you will go much slower. Using a combination of fast cadence and a powerful pedal stroke makes the bike really jump; on shallow downhills you can impress your upright friends.

Fun With My P-38

The Lightning combines a low seat, upright seating position, high bottom bracket, and above

seat steering to form a fast package. I'm faster on my Lightning than I was on my upright bike over just about any territory and have set three of my four fastest century average speeds (out of 26 centuries—7 on Lightning and 19 on upright) this year on my Lightning. I have hung out in 25 mph pacelines (guiltlessly staying at the back because it is no fun for upright riders to draft a low bike like me) and have at times actually *waited* for upright riders at the top of hills. Memorable moments include dropping a 25 mph paceline during RAIN (Ride Across Indiana) because I didn't like experiencing the slinky effect at the back of the 10 or so riders in the paceline (I think I accomplished this feat on a slight downhill—I don't think I can go that fast otherwise). With a downhill run at a hill the P-38 will climb surprisingly well. On the local Hilly Hundred ride I took advantage of downhill speed to blow by a couple guys who looked like racers; I was doing 27 mph while they were going about 18 mph and couldn't believe I could ride so fast.

The Lightning P-38 can go fast and can climb respectably. The bike certainly contributes to performance but there is no substitute for training. If you want to climb well on a recumbent you must practice climbing hills. Because you cannot stand and pedal, recumbents force you to be a disciplined rider because you can't be lazy and use your weight to get you up hills. I've found that I can ride with seated riders of similar ability, but there is not much a recumbent rider can do to keep up with an upright rider who is standing and pedaling hard except pedal fast and hope a downhill comes pretty soon so you might be able to catch up again.

Customer Service and Product Quality

Not long after my first century ride on the P-38 I made a small adjustment to my boom length and one of the rear binding braze-ons broke off. To say that I was disappointed is an understatement. I disassembled my bike and sent the frame to Lightning, along with about a two page letter expressing my satisfaction with the performance of the design but disappointment with the failure of a braze-on on a \$2,000 bicycle. Imagine my surprise when Tim Brummer himself, called to apologize for the problem and to explain that the individual who brazed my bike was collecting unemployment because of the poor work this individual was doing. I thought the folks at Lightning did a good job of appeasing my unhappiness. While the bike was in Lompoc they also stripped all paint off the frame and checked the other brazes on the bike to ensure they were OK; this is not something they had to do but ensured that no other braze was poised to break. The bike was repainted and returned to me, and I've had no further problems in over 4,000 miles of riding.

My impression is that quality control at Lightning is improving. This conclusion is based on the observation that I had problems with loosening spokes on the first wheel I purchased from Lightning but not with the second wheel purchased about a year later. And poor employees aren't allowed to hang around very long.

When Ordering A Lightning

My only other frustration with my P-38 is that I made quite a few mistakes during the pur-

chase process, and could have gotten my bike set up as it is now much cheaper if I had just purchased the P-38 frameset and set the bike up myself. For those of you who are particular about what components are on your bike, buying the frameset is an option you should consider. Another option is to buy a stock bike and upgrade at your leisure.

My first recommendation to anyone purchasing a new recumbent is to know what you want and then to take the steps you need to get it. For instance, I had triple chainrings and wide gearing on my upright touring bike; when my recumbent arrived it didn't have as low a gear as did my old upright bike so I swapped out the entire rear portion of my P-38's drivetrain (shifter, derailleuer, wheel, and cogs) to get what I wanted. If I had known the gearing on the bike before it arrived at my doorstep I would have been able to make more intelligent decisions. Of course, much of the blame can be placed on my shoulders for being ignorant. When purchasing a Lightning, clearly specify which front wheel you want. Customers have many options and can choose 16", 17" and 20" wheels with various spoke counts available. I have used both a 16" wheel (with 36 spokes) and a 17" Moulton wheel (with 32 spokes) and like the Moulton much better, though the tires and tubes are more expensive. But using the Moulton tire raised my highest-ever bicycle speed from 50.5 mph to 51.9 mph down the same hill.

If you think you might ever want to add the F-40 body to your P-38, even if the probability is remote, I suggest that you order the boom with a braze-on for that purpose. Also, for a few extra dollars you can have a third set of water bottle braze-ons placed on the tube into which the boom slides. If you want the stopping power of hydraulic brakes, order them with your original purchase. It is difficult to switch over to hydraulic brakes later because different braze-ons are required. Some P-38 riders recommend that purchasers always order the P-38 with hydraulic brakes because the hydraulic brakes have a lower profile and won't be rubbed by the chain (think of it as perpetual chain slap onto your brakes) like some cantilever brakes. I have not had a problem with my XC-Pro cantilevers rubbing, but it is something to be aware of.

For heavier riders and/or people interested in performance the suspended front fork should be considered. Lightning recommends the purchase of the suspended front when using the Moulton wheel and the rider weighs over 150 pounds. At 180 pounds, I'm definitely in this range; I've ridden a normal fork for about 4,800 miles (1,000+ miles on a Moulton wheel) without incident, but see how a suspended fork can im-



prove performance. For 1996 I'm having a suspended fork installed on my bike. Keep in mind that it would have been less expensive to get it when I originally ordered the bike.

When you first get your Lightning be sure to tighten the strings that hold the mesh to the seat frame because it is possible for the seat back to rub on the rear tire and develop a hole. I did this and had to patch my seat before I switched out seat covers at the end of this year. Using fenders (available from Lightning) will prevent rubbing, and has the added benefit of keeping water off the back of your head when you hit a puddle. Also, check the strings periodically as it is possible for them to rub through and break. Luckily, I was almost home when this happened to me. I try to regularly clean the dried salt off my seat because it can't be good for the material.

In Summary

Overall, I have been very satisfied with my P-38 and look forward to the day when I can purchase a Lightning F-86. Anyone interested in going fast on a bicycle should consider Lightning products as a possible option. Of course, the primary drawback of purchasing a Lightning is its cost. Everyone must decide for himself/ herself whether the bike is worth the price. I think it is.

More Component Suggestions

Blackburn rear racks are available from

Lightning, but I purchased a Cannondale aluminum rack (lighter than many others) from a local bike shop; mounting is very easy. Once you become comfortable with your Lightning, I highly recommend clipless pedals because your feet are high relative to your hips and clipless pedals ensure that your feet remain connected to the pedals. I started using my clipless pedals after two or three short jaunts around the parking lot, but I was familiar with my pedals from my upright-riding days. I prefer two-sided clipless pedals.

I added an Aerospoke rear wheel with an 8-speed cogset and long cage derailleuer to give me a 20" low gear and 24 speeds. I changed to a stronger spring the rear derailleuer which improved shifting, particularly when using the small chainring.

Nick's Lightning Update

Just a few comments after having ridden my P-38 another 3,200 miles since the article was written. This year the bike has continued to be my faithful steed, carrying me on century rides (or further!) in Indiana, Ohio and Oregon.

The suspended front fork is great! It definitely improves the controllability of the bike, particularly at speed. I only wish I had gotten it much sooner. But I have also installed a headset locking nut above my headset because when the fork was first installed my headset loosened dramatically in about 200 miles. It might have been the two sets of railroad tracks I ride over each

Lightning P-38

Model	P-38
Designer	Tim Brummer—1984
Design/ Steering Type	MWB ASS
Wheelbase	44"
Seat height/recline angle	21" 30-40° Adjustable
Weight (mfr. supplied)	#25
Weight distribution (bk./ft.)	55/45
Frame/ Fork/ construction	4130 CroMo brazed
Seat frame/material	Aluminum/Nylon mesh
Derailleurs (ft./rr.)	Shimano Deore LX

Shifters	Grip Shift CX DT 21 spd.
Crankset	Suntour XC LTD 26/46/50
Freewheel/ cassette	Shimano 11-28 7 spd.
Gear Inch Range	25-123
Brake (fr./rr.)	Dia Compe GX 500 sidepull
Rear Wheel/ hub/rim/ spokes	700c STX/Sun
Front Wheel/hub/rim/ spokes	16" x 1-3/8", 17(AM) or 20" x 1.5"
Bottom Bracket/Headset	Deore LX/Stronglight
Paint/ colors	Red or Blue
Suggested Retail Price	\$1995



ABOVE: Who says you can't tour with a P-38? This "kit" belongs to Mats Nilsson of Sweden. The trip was his tour to the UK for the HPV races a few years back. Photo courtesy of Mats Nilsson

LEFT: Dave Yust (left), Jim Fentress (center) and Dennis Kathrens (right) on their Lightning P-38's at the Swetsville, Colorado Zoo. Dave says, "Ride out of the dinosaur age...on a Lightning. THE bicycle of the 21st century!" Photo courtesy of Dave Yust.

BETWEEN: Lightning P-38. Photo courtesy of Lightning Cycle Dynamics



way when I leave my apartment, but with the headset locking nut everything has been fine for another 3,000 miles.

I think Speedplay clipless road pedals are great. They allow entry from both sides and are relatively easy to walk in for road cleats. The float is good for your knees. Though upright riders describe the feeling as "pedaling on ice," you don't notice it on recumbents nearly as much because of how your feet hang down.

It may take the better part of 5,000 miles to really get fully comfortable with handling the bike, but it does happen. My feet reach the pedals from the ground with no great thought, I can trackstand, and ride in a pretty straight line (this last one took the longest to master as I had been called "squirrely" early in my Lightning riding career).

I have a new boom with F-40 braze-on installed and eagerly await the delivery of my F-40 fairing this fall/winter.

For more information contact Lightning, 312 Ninth St., Lompoc, CA. Ph#805/736-0700. Tell them you saw Nick's article in RCN#36. □

Editors Note: For more articles on the Lightning, see RCN#7 (\$6); Tim Brummer's design article in RCN#15 (\$6); Zach's F-40 review in RCN#24 (\$5); and the Stealth review in RCN#34 (\$5).

Lightning P-38 Rider Comments

"A Lightning P-38 owner does not have to rely on writing Email to the HPV internet pleading for advice on finding a better seat or any possible locations for mounting a computer, water bottle(s), a kickstand, a pump, a rearview mirror, or lights. The P-38 is performance-wise, ergonomically, mechanically, and aesthetically at the zenith. The P-38 is readily adaptable and capable for touring and racing. No other recumbent is as easy for integrating/interfacing necessary components and accessories, as convenient for wide-range gearing choices (without resorting to the heavier and more expensive Sachs 3x7 rear hub), or as outrageously comfortable and fast as the Lightning" — *Dave Yust*.

"The bike I received about 8 months ago is top quality. I've had no mechanical problems with it outside of minor tweaking. The P-38 is a very fast machine. I have belonged to a bike club here in Houston for the past 5 years and have attempted to ride with the "Hammer Heads" on a Trek 520, Ryan Vanguard and now the P-38. I kept up on the Trek, was blown away on the Ryan. And on the P-38 I am, literally ripping most of the club and consider myself in the top 5% speed wise over a 50 mile course" — *Tom Standley*.

The P-38 is stable, predictable, yet quick handling. It encourages you to go faster on long twisting downhills. A wonderful combination of comfort, speed & great handling" — *Bruce Boysen*.

"Some are built for comfort, some are built for speed. This one's built for both" — *Dennis Kathrens*.

"I bought a used P-38, not knowing a thing about recumbents. Over the years I continue to say Boy did I luck out. It's all the things Zach, Dave Yust, Bruce Boysen, Greg Duvall and others say it is. It's one of the few designs that can be upgraded to a fully faired vehicle. (Why is that?) When you upgrade to a fairing, the bike underneath has to be able to handle the increased demands - the P-38 base does just that. I use the bike (mostly the F-40) for all my shopping and running errands, and long distance touring. I have been on tour (Seattle to Sacramento) and did some racing (Eureka 94 - placed second on a slalom) then continued my tour. What a bike!" — *John Tetz*. □

**RCN#38 is the
RCN 1997 Buyers' Guide.
Manufacturers need to contact RCN
for listing info ASAP.**