GARY FISHER BICYCLES

The First Name in Mountain Biking

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For the 2002 model year, we are introducing something new to the bicycle industry- a frame material designed specifically for the manufacture of bicycles. We call it ZR9000.

Like some of our competitors, we can wax eloquent about various laboratory tests of strength and stiffness. Often, a new material is used as a reason to substantially raise the price of a bike. But as we've said before, the ride of a bicycle is the sum of its design, manufacture, and material, in that order. In other words, its not the material, but what we do with it that makes a bike ride better.

A great frame material should allow the designer to make a better bike. If a frame isn't lighter, better riding, and at a better value to you, where is the benefit from this new wonder material?

So the proof is in the finished product. Our models using ZR9000 are up to 190 grams (almost 1/2 pound) lighter than last year. At the same time, they are stronger, and have a fatigue life up to 5 times that of the comparable 2001 models. And we can deliver these awesome new bikes at approximately the same cost to you.

For some, knowing you are buying a lighter, stronger, longer lasting bike at the same cost is enough. But we know some of you want to know more about this technology. To explain in more detail, we've asked the developer of ZR9000 to say a few words:

A MATERIAL DESIGNED FOR BICYCLE FRAMES. by Gary Klein

Advertising Claims

I'll bet you are thinking: "Just what we need, another new bike frame material! Isn't the field crowded and confusing enough as it is? Are all of the various frame materials really different? Do the differences really matter? How can every material be superior to every other one? Or are they just marketing hype?"

Which of the claims from which companies should you believe? Most of the advertised properties for different frame materials are the properties of a material in its highest temper state, made into little coupons and tested in laboratory machines; not the strength that the frame material is in after it has been made into frame tubes, and welded or brazed into a bicycle frame. The material may chemically be the same, but the advertised strength is not there.

In addition, and more to the point, the advertised strength is a bulk material property and does not reflect the engineering design of the bike, such as the diameters, wall thickness, and shapes of the tubing used. These have a huge influence on the overall strength of the finished frame, and at least as much influence on the way the bike rides. Please do not equate advertised material properties with frame durability, performance or low weight. If you want to compare the strength of one frame to another, you probably need to test them both. And if you want to compare the ride, instead of looking at charts you'll need to ride them!

Why Aluminum?

In the early 70's, when I lined up on my first starting line, the bikes around me weighed an average of about 22 pounds. My Fuji Finest was at least average in quality, yet the frame represented the heaviest part of the bicycle. Even so, I found that it was not stiff enough to keep the drive train in alignment during sprinting efforts.

At the time I was a student at MIT in Boston, Massachusetts. A professor, myself, and some other students started to look at what would make a better material for bicycle frames. The standard high-end bicycle frame was made of double-butted chrome molybdenum steel alloy tubing. Steel is easy to work with, but it is very dense, making even the thin tubes of my high-end steel racing bike into a heavy structure.

Our goal was to make the frame lighter, stronger and stiffer. To meet those goals, our first criteria was a material less dense than steel.

As lower density alternatives, we looked at Aluminum, Magnesium, Titanium, and Carbon fiber. While each of these looked like they might provide some benefits, we were also looking for an easy way to make a few bikes. We were hoping to find a material that we could obtain easily, and assemble into a strong and light frame.

Carbon fiber needs special molds for each size and geometry of frame to be produced. This would take time and cost a lot of money for prototypes.

Titanium was very expensive and the welding was difficult. The entire area being heated needed to be shielded from air. Even ignoring the cost, it was difficult to obtain in the tubing sizes we needed for bikes. Most available tubing was CP (Commercially Pure) titanium which did not provide much of a strength benefit.

Magnesium has the lowest density of the metals we looked at. Initially Magnesium looked good, with relatively high tensile strength per weight, but it does not have the ductility of aluminum, and does not weld as easily. Also the tubing sizes we needed were not readily available. Another problem was this was in the Boston area, where the streets are salted in the wintertime. We had seen what the salt does to a steel frame, and we knew that magnesium has an even lower resistance to corrosion. So it would need a real good protective coating.

After our research, we decided on aluminum as the material of choice. As we wanted the highest performance frame possible, we started looking at the highest strength aluminum alloys. Unfortunately, they were difficult to weld, to form, had corrosion problems, etc..

Materials that were strong, but not weldable, would create the need for special bonding lugs at each joint. These would have to be designed and machined individually for each frame design, a somewhat daunting task. So we looked for a material where we could create a high strength weld with normal welding methods.

Finally we settled on 6061 aluminum. It came the closest to meeting all of our frame material goals. 6061 was the workhorse of the structural aluminum alloys, and it had most everything we desired. It is easily welded, machines easily, is formable at room temperature, and resists corrosion pretty well (it is used extensively for marine applications). As a real

plus, 6061 was used extensively in aircraft, so thin wall tubing was readily available in various diameters.

Aluminum

Pure aluminum is very soft. The molecules align and interconnect such that in pure aluminum, molecular slippage easily occurs in all three directions (slip planes). As a result, it is not strong enough to make a good bicycle frame.

By adding various alloying agents to the aluminum, different characteristics can be obtained. These alloys of aluminum have a number which describe the alloying elements. 6061 aluminum has small amounts of magnesium, silicon, copper, and chromium added to the pure aluminum. This alloy obtains its strength from microscopic precipitates (magnesium silicide crystals) that mechanically stop the slip planes in the aluminum crystals from sliding when force is applied. As an analogy, they work like putting sand in a sliding bearing.

Aluminum alloys can also be strengthened by mechanical working. Cold-drawing the tubing is an example of mechanical working. This causes microscopic defects and strains in the aluminum crystal, which make it more difficult for the slip planes to move.

Welding aluminum

When welding 6061, and aluminum alloys in general, several undesirable things happen.

With changes in temperature, aluminum changes dimension more than steel. When a weld puddle cools down, it shrinks and pulls on the adjacent material. With aluminum alloys this means a weld distorts the material more and leaves the material under high residual stress after the weld is complete. This residual stress adversely affects yield strength and fatigue life.

If the tube had any strengthening due to mechanical working, this cold-work induced strength would be lost near the weld where the material was heated to high temperatures. Welding removes the strengthening effects of the T6 heat treatment.

The optimum distribution and size of magnesium silicide crystals are created by the T6 process, which involves a high temperature solution-quench followed by lower temperature artificial age. Exposing the material to the high temperatures of welding dissolves some of these fine crystals and make others grow large, weakening the material near the weld.

Heat treatment of aluminum

6061 loses so much strength after welding that we decided there was no alternative but to heat treat the entire frame after welding in order to obtain a high strength, long life, lightweight frame. By heat treating the entire frame to a T6 condition, the material is brought back to full strength throughout the frame structure. At 1000 degrees in the oven, part of the solution quench process, the aluminum is close to its melting temperature. All of the precipitates present at room temperature dissolve into the aluminum. This makes it so soft that all of the residual weld stresses are relieved.

Of course we are not the only manufacturers to solution quench and artificially age the complete frame. Several other manufacturers of premium frames also typically do this on frames made of 6061 or other 6000 alloys.

Often the frames made from 7000 alloys are not heat treated after welding at all. In other cases they are only artificial aged after welding, which strengthens the material which was hot enough for long enough to dissolve the alloying elements, but does nothing for the rest of the frame material.

In these cases the alloy just got hot enough to partially dissolve the alloying elements, or just grow the strengthening crystals to a large size which weakens the material substantially. This is called over-aging. It is similar to what happens if you leave the material in the ageing oven for too long a time. Some of the crystals grow larger in size, while others shrink or disappear. The net result is that the weld is strengthened, but the tubing adjacent to the weld is weakened. So even though 7000 alloys claim a higher strength than 6061, it is probably less after welding.

Grain growth

In my opinion, the limiting factor for designing aluminum frames is the fatigue life. If we design a frame in 6061 T6 for the same fatigue strength as Chrome-Moly, the 6061 frame will have a much higher yield strength than the steel.

I wanted to make our frames even lighter, so in the early 80's I started looking for an aluminum alloy with a higher fatigue strength. There were a few alloys in the 6000 series that had slightly better test numbers.

The problem with the higher strength alloys is that the presence of the hardening elements causes the microscopic aluminum crystals (the grains) to grow when the alloy is at high temperatures or when it is under stress. Larger grains result in poor strength properties.

In making a Klein frame, we have multiple steps where we anneal the material with a high temperature oven cycle, in order to make it soft so we can perform some type of butting, swaging, forming or bending operation on it, after which we have to either solution quench and artificially age it to bring the strength back prior to the next operation, or we anneal it again to remove the work hardening effects of the last operation so we can perform further work to it.

I took a trip to the Alcoa Research center and talked to several of their material experts. They told me that I could not use the higher strength 6000 series alloys I was interested in because we would see uncontrolled grain growth in our process. 6061 uses a small amount of Chromium to help slow down this grain growth. That is what has made it work well for our early frames. So I did not find a good replacement for 6061 on the first try.

Developing a recipe for a better aluminum alloy

I am not a metallurgist, so I have worked with several metallurgists during development , who have helped a great deal. However, I knew our processes and I knew what was needed to make a better bike. So I knew what I was looking for and researched other alloys and their use.

Around 1990, I started looking at some Lithium Aluminum alloys. These are different than typical aluminum alloys in that they have significantly lower density, and increased modulus (that means higher

stiffness). They are not perfect, and have some unique problems to overcome. The aircraft industry spent millions on their development, but these alloys have not seen a lot of use to date.

One of the interesting features of the particular lithium aluminum alloy I was working with was that it utilized Zirconium as the ingredient for grain control. From our testing, zirconium seemed like it was particularly effective. So when I decided to attempt to create an alloy specifically for making a bike frame, I decided to get rid of the Chromium used in 6061, and use Zirconium instead.

Since we use multiple heat treat cycles when we manufacture a frame, we needed a high response to the heat treatment. So I added more of the precipitation hardening ingredients Silicon and Magnesium.

I also increased the amount of Copper, as it has a strong strengthening effect, and the copper-based aluminum alloys show excellent fatigue properties. So I thought more Copper might help increase the fatigue strength of the alloy.

Another requirement we have is the ability to form the material substantially at room temperature when it is in the soft condition. The auto industry uses a couple of 6000 series alloys specifically designed for forming into complex auto body surfaces. These are 6009 and 6010, sheet forming alloys. The notable difference between these and other 6000 alloys is a significant Manganese addition. So I added a little Manganese to the alloy to improve the forming ability.

May I have a bit of alloy, please?

The barrier to testing a new "mix" is that you need a good foundry to make a batch for you. A single furnace load of material is 40,000 pounds, or 20 tons of aluminum. If the alloy does not work out well that could be a lot of scrap. So I made my best guess at what the percentages should be, and had the first batch poured.

Great results

ZR9000 has worked out extremely well. It machines cleaner and with less tearing than 6061 tubing can be mitered with higher accuracy, and press fits (like headset bearings) are more precise. In the annealed condition, it forms very well which helps us make our sophisticated chainstays. It welds very nicely, with high strength and good cosmetic appeal. It has an excellent response to heat treatment, which adds to our frame alignment. So compared to 6061, it allows us to make the frame without any additional trouble.

In a completed structure, ZR9000 tests out very well. In tensile tests of identical complete frames, the yield strength is about 1/3rd higher than 6061. On our fatigue testing machines, the ZR9000 frames endure 5 times the number of stress cycles (at the same loading) as the 6061 frames before failure.

These results are as good as I could have hoped for. We have been able to use the higher properties of the new material to remove weight in places where it is beneficial and increase the fatigue life and dent resistance of the frame tubing.

This is the first material that I am aware of that has been designed expressly for the process by which we make a high performance bicycle frame and thus to optimize the frame's performance.

The Name ZR9000 was chosen because the small amount of Zirconium addition for controlling the grain size is the key that allowed us to increase the amounts of the other strengthening additives. The 9000 is because new or experimental alloys which have not been assigned industry numbers are designated in the 9000 series. So this is our Zirconium grain refined, experimental alloy developed specifically for making state of the art bicycle frames.

Even though I have been working on aluminum bike frames for 28 years, the pace and amount of innovation has kept it really fun. I'm sure you will enjoy using our new products based on this material innovation.

Is aluminum a new material?

It should be common knowledge that most modern aircraft use aluminum exclusively for their primary structures (internal frames and bulkheads) and 95% or better of their exterior surfaces, including load bearing skins. The aircraft industry has been using these alloys for several decades. The aircraft companies have picked aluminum because it offers the best combination of material properties and processing capability in order to create high performance, light weight, robust aircraft. So aluminum alloys have certainly proved their long term durability and high performance in the aircraft industry. The occasional failure that has occurred has typically been due to a design or manufacturing defect or improper maintenance.

What about fatigue?

Occasionally we hear fatigue failure erroneously described as similar to the result of bending a coat hanger back and forth. This example is not relevant to the durability or reliability of a bicycle frame. When you permanently deform the coat hanger you are yielding it. This has no relation to fatigue strength. Some of the highest fatigue strength materials (like carbon composite) will not take a significant permanent set, breaking instead at a high force level. So these extremely high fatigue strength fibers would rate near zero by the coat hanger test.

What are the benefits of aluminum in bike frame construction?

Aluminum is a great material to work with. It's light weight, or more accurately, low density. One cubic inch weighs one tenth of a pound. And the lighter weight positively affects the ride quality.

Aluminum provides a great ride, if you use it to its optimum. The low density and high formability of aluminum allows a designer to tailor the stiffness of each part of the frame through tubing and joint design. Tube shaping and butting can make more difference in the ride of the bike than the material itself.

Aluminum is very strong. It is possible to achieve significantly higher strength properties in the aluminum structure per weight than in steel. Part of this comes from the basic material properties. You can use more material, and more easily form the material, so you can put just the amount and shape needed into the bike.

But the largest contributor to high strength is engineering and design. The low density and high formability of aluminum allows tubing with increased wall thickness, complex shapes and larger sections where we want to achieve high strength properties in the overall structure.

Are all aluminum alloys basically the same?

Some of the highest strength aluminum alloys, particularly in the 7000 series, have low elongation, or toughness, or resistance to crack propagation. This is important for overall strength and fatigue resistance. With alloys exhibiting higher toughness less material is needed to resist fatigue, and this can result in a lighter bike. Like with any bike frame material, good design and manufacturing is much more important than a small difference in a single mechanical property.

What do the numbers mean?

When we discuss aluminum alloys, we refer to a four-digit number. This is the alloy name, based on the alloying materials in the aluminum. A metallurgy reference would explain precisely what elements are added to the aluminum in a specific percentage.

The second part of describing aluminum alloys is the heat treatment or other strength enhancements which have been applied to the alloy. With some alloys, special heat treatments or work hardening are essential to achieve their maximum strength. Other aluminum alloys attain their maximum strength by simply cooling at room temperature, also known as 'normalizing'.

Since heat treatment adds extra steps to manufacturing, it adds cost. An oven large enough to handle bike frames also adds cost. 6061 aluminum requires heat treatment. 7005 is usually normalized.

SERIES NOMENCLATURE EXPLAINED-

Silver Series

Proprietary Fisher aluminum tubing, using 7005 aluminum. These frames use special tubing diameters, wall thicknesses, and shapes, but are not butted. In some cases, Silver series frames are imported, then painted and assembled in Wisconsin.

Gold Series

Like the Silver series frames, Gold series is Fisher designed aluminum tubing. However, Gold series frames are built with 6061 T6 aluminum. T6 indicates the hardness of the aluminum, developed through a full heat treatment and ageing process. Gold series frames are all built and painted in Wisconsin. Due to the mechanical properties of 6061 T6 aluminum, Gold frames can be made lighter than Silver frames with the same strength.

Platinum Series

Platinum frames are also Fisher designed tubes of a combination of ZR9000 and 6061 T6. In addition, Platinum frames have butted tubing, which reduces their weight and further enhances their ride. The exact placement of these materials is determined by where each material will do the most good in achieving a light, strong, affordable, and long-lived bike. They are built and painted in Wisconsin.

LeMond Titanium

Titanium bikes have been around for almost 30 years. During this tenure they have earned a reputation for excellent ride and durability. While the reputation of titanium is generally well deserved, there is more to a great bike frame than simply the material its made from. The high cost of titanium is wasted without purposeful design and precision manufacturing.

Research and Development

Although Greg LeMond raced titanium frames way back in '92, we wanted to take a fresh look at the current titanium technology. As a starting point we consulted Gary Helfrich, the bike industry's recognized titanium guru. For those who don't know Gary, he was a founder of Merlin Cycles. Gary's experience with different tubing dimensions, titanium alloys, and manufacturing techniques were very illuminating. Our engineering staff followed this with our own extensive R&D. Armed with a clean design slate and fresh research, it was time to sit down at the computers and design a titanium road bike worthy of the LeMond label.

Which titanium?

There are many titanium alloys available for bicycle manufacture. These different alloys exhibit a wide range of mechanical properties (strength, hardness, etc.) which effect the final weight, stiffness, shock absorbency and overall ride of a bike. The physical properties of the metal also determine the available manufacturing techniques. The right material choices were essential to our ability to make a high quality, excellent riding titanium bike for a reasonable cost.

CP (Commercially Pure) titanium is available in a variety of grades listed numerically as CP1, CP2, CP3, and CP4. These different CP alloys are separated by the amount of trace elements in the alloy. These metals share some of the physical properties of the more popular titanium alloys. They are strong, tough (resistant to crack propagation), and resistant to oxidation. However, they are fairly hard so they are somewhat difficult to machine or cold work. In addition, CP alloys do not have the tensile strength enjoyed by some of the other titanium alloys.

3/2.5 titanium is an alloy with 3% aluminum and 2.5% vanadium. This alloy exhibits much greater tensile strength than CP grades. With higher tensile strength, the amount (and weight) of material can be reduced while retaining the same structural strength. Although its expensive to do so, 3/2.5 can be drawn or butted mechanically. This allowed us to achieve the tubing designs and manufacturing techniques our engineers wanted to pursue.

Another titanium alloy we considered was 6/4 titanium. 6/4 Ti is less likely to form a molecular bond (known as cold welding) when coupled with different metals because its very stable on a molecular level. This property makes 6/4 ideal for fasteners like water bottle screws. However, 6/4 exhibits extreme hardness making it less than ideal for building a bike frame. Machining, butting, or other metal working with 6/4 is very difficult and becomes prohibitively expensive. The only practical way to butt 6/4 titanium tubing is to roll it into a sheet and then weld it into a tube. Our engineers didn't see 6/4 as the right material to meet our goals.

Butting titanium

A bike frame has much higher stress loads near its joints than in the middle of the tube. Some of the joints see much higher loads than others, as exemplified by the extra high stress at the head tube/ down tube junction. To supply adequate strength, these high stress areas need a lot of material. However, in areas like the middle of the top tube there is much less stress. Where the stress is lower the tubing can be much thinner and thus lighter. To maximize strength and at the same time minimize weight, the frame tubing must have varying thickness, or butts (Fig. 6). Butted bicycle tubing is an advantage with any frame material, including titanium.

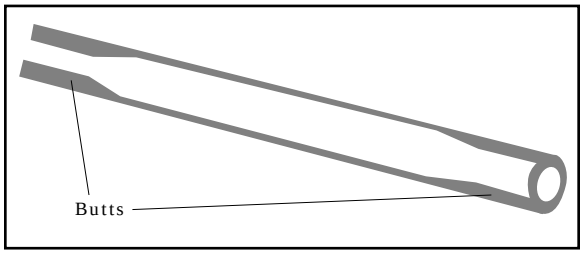


Fig. 6

Butted aluminum or steel tubes are made on a drawing bench. In this manufacturing process, extreme force is applied to a tube to force it through a die while a mandrel inside the tube controls the wall thickness. Precise control of wall thickness is provided, while the mechanical working of the material adds tensile strength. The strength increase occurs because the mechanical working alters the crystalline structure of the metal. Its a win/win situation with lighter, stronger tubing as the result. Similar techniques are used to create constant wall, tapered tubes. Examples include better grades of chain stays, seat stays, and fork blades.

Titanium alloys exhibit very high toughness and hardness, physical properties that make titanium difficult to butt or manipulate. Like aluminum or steel, cold working titanium orients its crystalline structure for a stronger tube that's more fatigue resistant. Also like aluminum or steel, this manipulation is expensive. Due to the exceptional hardness of titanium, the difference in cost is huge.

To reduce the cost of butting titanium, some manufacturers butt the tubes using a process called chemical milling. In chemical milling, the titanium is etched or removed with acids. Interior chemical milling of a tube must be carefully monitored for wall thickness, requiring small batches which adds to the expense. Exterior chemical milling is easier to monitor but decreases the outer diameter as well as the wall thickness. This reduces the stiffness and strength of the tube. Since the metal is not worked, chemical milling does not provide the benefit of altering the crystalline structure of the titanium.

Another lower-cost method for butting titanium is to use sheet titanium that has been chemically milled, and then roll the sheet and weld it into tubes. This method leaves a seam in the tube. With aluminum or steel, seams can be 'normalized' by further drawing and cold working the tube. Normalization is the process which restructures the molecules of the metal to reestablish

their original mechanical properties after being weakened by heat. Due to the hardness of titanium, cold working a welded seam isn't practical. To compensate for this weakness, a seamed tube has to have extra material making it heavier than a seamless tube.

A third cost-saving method for butting titanium is outer butting, where the tube is machined on the outside. As with exterior chemical milling, this method makes a tube with constant inner diameter but varied outer diameter, reduced in the middle. The reduced outer diameter means lower stiffness and strength.

LeMond titanium tubing-

Recent advances allow 3/2.5 titanium to be butted in the traditional way of steel tubing, on a drawing bench. Its expensive, but provides optimal tubing shapes and outer diameters, exacting precision, and works the crystalline structure of the tube to increase the tensile strength. The new LeMond titanium models take full advantage of this new technology throughout the frame. Although you can't see it, the main triangle is double butted.

The same processes used to butt a constant outer

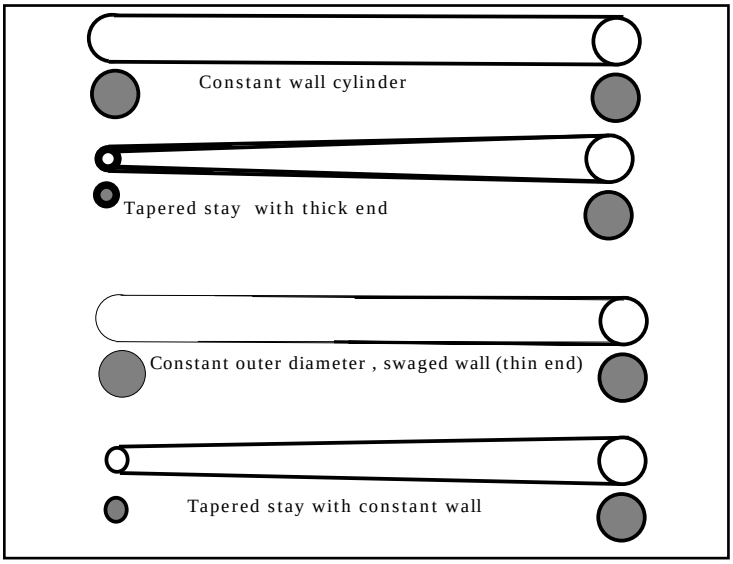


Fig. 7

diameter tube in the main triangle is used to create the constant wall, tapered stays (Fig 7).

Most titanium bikes use constant diameter, constant thickness stays. This is the cheapest way of doing it. Compromises must be made between the stiffness needed at the bottom bracket and seat tube (defined by the outer diameter at those joints) and comfort (defined by the outer diameter at the dropouts).

A simple swage of a constant-wall cylinder results in tapered stays, but with thicker material at the dropouts. This would probably ride better, but the additional material makes the bike heavier.

It takes several steps to make the LeMond stays. First, a constant-wall cylinder is swaged so that the dropout end is much more thin-walled. Then the tube is tapered from the outside. All this metal manipulation is expensive, but the result is a constant-wall tapered stay. This makes for a lighter bike that rides better, and the stays blend in beautifully with the seat tube and custom dropouts. But there's more than looks to these expensive stays. The shapes and wall thicknesses allow the stays to stiffen the bottom bracket without a weight penalty. Like on high end aluminum or steel bikes, the tapered stays put comfort into the rear end of a Ti bike, something that's been missing on Ti bikes trying to cut costs with ugly, constant outer diameter stays.

While we were maximizing the LeMond stays, we also dramatically shaped the tubes in the main triangle to accentuate their ride qualities (Fig. 8). The down tube is bi-axial, meaning it is ovalized in two planes. (Fig. 8) The upper end is taller than wide. The lower end is wider than tall.

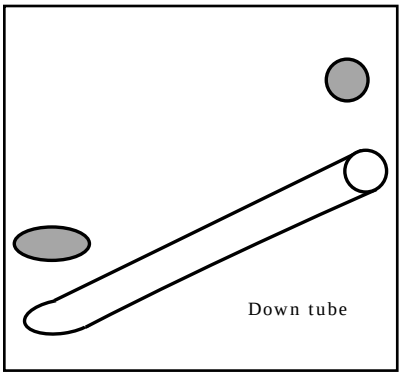


Fig. 8

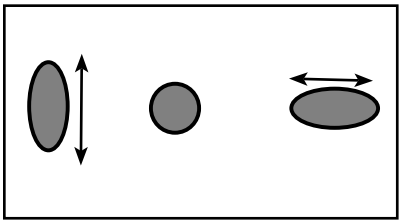


Fig. 9

The stiffness of a tube in a given direction is determined by the length of the axis in the plane in which the force is applied (Fig. 9). By using an oval shape, the tube gains stiffness in the plane where its wider, and the smaller axis across the oval has a decrease in stiffness This allows us to tune the ride. In addition, stiffness in a structure like a bike frame can also add to its strength, since stiffness is resistance to deflection, and you must deflect the frame before you can bend it. By ovalizing the down tube at the head tube junction, we've added frontal impact strength to these frames.

In addition to the performance increase of our design, shaping the tubes has other benefits. Tubes shaped in this way provide a greater weld area, directly increasing the frame strength.

As a final detail, we matched the tubing diameters to create a consistent look throughout the LeMond line. This thoughtful design makes it easy for you to see the associated quality, both moving up in price as well as down. Even better, the titanium models fit the parts of the other LeMond models (except the custom LeMond headset). This makes it easier for dealers to stock the parts that work on LeMond models. After all, any race mechanic spending his nights prepping a fleet of team bikes will tell you a racing bike needs to be easy to service.

All these tubing details are expensive, but our research showed that when done right, the value of the extra work was appropriate considering the added performance. In other words, you really can feel our work in the ride of these bikes. We've taken LeMond performance to a new level.

FRAME DESIGN

Geometry

Once we determined the best tubes for our frames, it was time to create a design which used those materials to their advantage. Of course, we already knew what the geometry should be. Greg's geometry has a proven pedigree. The geometry of the new Ti frame is identical to the popular LeMond Zurich in angles and tube lengths.

FOR THE MECHANIC

Grease threads

Titanium alloys such as 3/2.5 have a tendency to create a permanent or semi-permanent bond known as cold welding when exposed to certain other metals. Its very important to adequately prepare fasteners used on titanium threads. A heavy grease will work, and Anti-Seize is even better.

"Drop-in" headset

Instead of pressing a cup into the head tube to hold the headset bearings, they sit inside the specially machined head tube. Supported directly by the head tube, the weight of the cups is eliminated. Without cups, the headset becomes almost a zero stack height, so the head tube can be taller. The taller head tube allows greater separation between the down tube and top tube for additional strength, and makes room for the added weld surface used by the bi-axial down tube.

Reynolds Composites

Although they may be better known for over a centuryof steel fabrication, Reynolds now makes bicycle products from other cutting-edge technologies. As an example, Reynolds manufactures the Ouzo Pro fork found on the LeMond Tete de Course.

This carbon fiber composite fork is a prime example of the new technologies being developed by Reynolds. In addition to carbon fiber fork blades, the Ouzo Pro also incoporates a carbon crown and steerer.

Complimentary performance

The usage of carbon in place of parts traditionally built from steel or aluminum creates a very light weight structure. Careful design creates a fork with excellent road feel. Together, these features lend themselves very well to the titanium frame of the LeMond Tete de Course, making this an excellent riding bicycle.

Carbon forks require special care

With the replacement of the metal parts of the Ouzo Pro fork with carbon composite material, specail care must be taken in normal installation and maintenance procedures. Failure to observe these special needs could cause a part to fail, resulting in loss of control of the bicycle.

Do not use a traditional star-fangled nut

Never use a starfangled nut with the carbon steerer of the Ouzo Pro. Attempting to insert a star-fangled nut into the carbon steerer will cut fibers, weakening the steerer.

Instead, use the Compression Adjustment Plug supplied with the fork. used properly, this device allows proper preload of the headset bearings without damage to the steerer.

Follow the instructions which came with the fork to install and adjust the Compression Adjustment Plug.

Use the correct number of spacers

When adjusting the stem height on the carbon steerer of the Ouzo Pro fork, use at least 2 spacers (10mm) and not more than 1 1/2" (40mm) spacers.

Use no grease

Do not use grease between the stem and steerer.

Only use stems with a circumferential clamp design

When clamping an Ahead-type stem to the steerer of the Ouzo Pro fork, only use "circumferential" type stems. This type of stem applies even pressure all the way around the steerer. Stems which use sliding wedges to clamp the steerer, or similar designs with moving parts, do not meet this requirement.

In addition, the stem clamp design should be such that the gap of the clamp should be radial, and the bolts should be perpendiculr to the gap. In other words, the gap of the clamp should point exactly towards the center of the steerer, and the bolts should be perpendicular to the gap. Furthermore, the clamping bolts should be as close to the steerer as possible.

Consult your dealer

Your Ouzo Pro fork has been properly installed at the factory, and adjusted by your dealer. If you are not sure of the correct maintenance or adjustment of your fork, or would like to change stems but are unsure of which type of stem is acceptable, consult your dealer.

LeMond Reynolds 853

Steel is real

Steel is the traditional material of choice for bikes. This dates back to the early years of bicycling. The advantages of steel are many. Traditional steels are inexpensive to make, and inexpensive for the frame builder to work with it. Steel can be welded or brazed, both easy techniques (for a skilled craftsman) that allow a creative joining of material. In other words, steel allows a freedom of design, at an affordable cost. Last, steel has excellent strength, stiffness, and fatigue resistance, all important factors when making a lightweight efficient structure like a bicycle frame. These factors should explain why steel has been the traditional choice for frame building for the last century.

It's got the feel

Over the last century, a huge number of steel bikes have been built. The early ones were ordinarys, or high-wheelers. Some were fancy adult tricycles. Some were heavy paperboy specials. And some were exotic, super light racers.

The point here is that a lot of experimentation has been done with steel bike frames. Through science, or trial-and-error, steel bikes have been made of all sorts of shapes, sizes, tube diameters, and wall thicknesses. Because of the design and construction freedom of steel, lots of people have had the opportunity to experiment. Over the years, the parameters of steel bikes have become well defined. We know how light they can be made, and how to make them ride well.

Through the years, enough steel bikes have failed for us to understand what steel can and cannot be made to do. And enough designs have been ride-tested to know what rides well and what doesn't. Basically, the experience gained over the least 100 years makes the best steel bike a refined, quality machine that's as light as it can be and offers the best possible ride.

Not all steel is the same

Steel has a high modulus. In other words, it's pretty stiff. And that's true of all steel. There's hardly any difference in the stiffness of a high-end steel like Reynold's 853, and the 'tensile' steel found on a child's bike.

Likewise, 'tensile' steel and Reynolds 853 have the same density, or weight per unit volume. In other words, a cubic inch of Reynolds 853 is not any lighter than a cubic inch of tensile steel.

There is, however, a large difference in the tensile strength of the various steel alloys. This difference requires that to be equally durable, more low strength material is required to build a structure than would be needed of a high-strength material. This need for more material somewhat explains how a frame built from Reynolds 853 can be so much lighter than a tensile steel frame.

Mechanical properties vs. Finished goods

As we said earlier, steel can be joined in a number of ways. It can be bonded, riveted, welded, brazed, and more. Of these, the most popular in bike construction today is welding. Welding involves heating the materials until molten, and letting them cool into a single, solid piece. Sometimes additional material is added in the form of a welding rod.

As steel is brought to these high temperatures and cooled, the molecules in the steel undergo changes. Depending on the temperatures, and the length of time at a given temperature, the molecules will reform into microscopic crystals of varying structures. There is a wide variety of crystalline structures possible, with an equally varied assortment of mechanical properties of the welded state. To simplify, we can say that welding changes the steel, and it's common for the steel to lose strength as a result of welding.

In bike frame design, a good engineer will compensate for the expected strength loss of welding. They will design the tubing to be a little thicker at the heat affected zone (HAZ) so that the end result provides the required strength.

Steel technology leader

The Reynolds company of Great Britain (not the American company that makes aluminum foil) has been a leader in steel bicycle tubing since they developed the butting process in 1898.

Since 1930, racing cyclists all over the world have ridden frames built from Reynolds 531. This proprietary manganese-molybdenum steel alloy offered a blend of strength and ease of manufacture that was ideal for lugged and brazed construction.

In 1975, Reynolds introduced a very high strength steel alloy tubeset, Reynolds 753. Thanks to the extra strength, this tubing was made very thin-walled, and this had the effect of reducing frame weight considerably. 753 was more heat sensitive than 531, requiring special low-temperature brazing techniques which required a builder to become certified by Reynolds before being allowed to purchase tubesets.

Reynolds' newest revolution of the bike tubing industry is a steel alloy dubbed 853.

New construction techniques

With the advent of mountain bikes, brazed frame construction fell out of fashion. Brazing usually requires lugs to reinforce the joints. These special sockets are formed to accept specific tubing diameters, and hold them at a specific angle. The new mountain bikes of the early 80's changed bike design, using different tube diameters and joint angles than previously used by road bikes. To allow the freedom of design they needed to explore these new bikes, manufacturers switched to TIG welding.

Welding weight

Although brazing steel requires that the tubes be brought to a glowing, cherry red heat, it does not approach the steel's melting point. By avoiding extreme heat, the steel maintains its strength. With TIG welding, the steel is melted and strength is lost. To compensate, thicker tubing is used at the weld site which weighs more, and doesn't ride as well. The steel available simply couldn't be butted radically enough to avoid this.

New steel technology

Reynolds now addresses the performance concerns of a welded frame by a different path. They have developed a new alloy that actually gets stronger after welding. Since the welded area is stronger, it can be thinner. Traditional butting can be used, so the new frames built with this material are actually lighter than a lugged frame. After all, there are no lugs. And the wonderful ride of tried-and-true steel is back.

Gary rides. A lot.

Gary Fisher does a lot of bike riding. He has for years. He holds the RePack record, and won the National Championship for Masters in 1997. Basically what we're saying is this; Gary has skills.

Inspiration doesn't always come easy

So one day this skilled rider is out for an epic ride on his fave bike. He's cruising down a hill, not terribly tricky or anything, when he gets one of those free flying lessons and as he's laying on the ground he's wondering "What happened?".

So he picks himself up off the ground only to find that he's broken his wrist. Not a big deal, but nothing he really wanted. During the next few weeks of recovery Gary has time to think about his little accident and the bike. And that's how Genesis was born.

Whu' happened?

Gary analyzed the accident. He had simply been too far forward and pitched over the front wheel. The pivot point of his flip was the front axle. If the axle were further forward, he might have stayed upright. Gary has worked on geometry for years. He even had a fully adjustable bike. It had adjustable dropouts so you could change the wheelbase, chain stays, or fork rake. It had an adjustable head tube to change the head angle. Basically, you could try any geometry you wanted as long as the top tube stayed the same length. Using that bike, Gary developed what we now call "classic NORBA geometry" with a 71 degree head angle and 73 degree seat angle.

From all that experimentation Gary knew that changing the fork offset or head angle to move the front axle would make the bike handle poorly. The only way to get the front axle forward was to lengthen the top tube. But he didn't want to move the bars forward and change his position. He'd have to use a little short stem.

Gary defies convention

Common knowledge said that a short stem would handle weird. In a typical unconventional Gary Fisher way, he ignored common knowledge and built a prototype with a really long top tube. The genius here is that he didn't change his position on the bike, only the orientation of the bike's parts. Since he had moved the headset forward considerably, he had to use a 75mm stem to replace the 135mm stem he normally used. This setup added 60mm of top tube, moving the front axle 60mm forward, almost $2^{1/2}$ inches. And it worked!

This first prototype was a revelation. But Gary knows the bike to be an organism, where everything affects everything else. He had developed enough frame designs to know that he had just scratched the surface and that every dimension on the bike, from chain stays to seat angle, could benefit from the increased front center. But instead of telling you that long story of test riding and prototypes, let's just skip to the finished Genesis frame and what defines it today.

Genesis features and what they do for you

The primary benefit of the long front/center (distance from the bottom bracket to the front axle) is stability. This certainly helps in conditions like those that caused Gary to crash. But the long front/center makes the bike more stable all the time.

Short stems and their effect on steering

The shorter stem used with Genesis geometry puts your hands closer to the steering axis. Steering can be done with your arms instead of a sweeping sideways movement of your shoulders. Your hands can move faster than your shoulders, so technical steering is precise at high speed.

Centered between the wheels

On a bike with a long front-center the front wheel is pushed further ahead of you. Anytime you find yourself moving back on your bike, it's in response to your body wanting to flip over the front axle. This happens on steep downhills, and also any time the bike is moving at high speed in rough terrain. With the front axle moved forward, there is added resistance to over-the-bars flight. You're more relaxed at speed, and since you're more in the saddle than behind it, you're in a better pedaling position to keep the power on.

How does it climb?

Common sense tells us that a longer front center places less weight on the front wheel. Intuition tells us that with less weight on the front wheel, the bike might not climb well. But geometry charts only tell part of the story, and Genesis bikes actually climb very well.

Here's two reasons why: with a shorter stem, your shoulders stay more over the centerline of the bike, even when turning. When your center of gravity stays over the frame centerline, the bike stays in better balance. With Genesis geometry, it's even easier to hold your line on steep, slow speed climbs. Secondly, when climbing hard in first gear any bike will respond to the pressure of pedaling. Imagine if the headset were placed in the middle of the bike, right below the saddle. The bike would hinge in the middle, between contact patches of the tires. With every pedal stroke the rear wheel would turn away from the pedaling force. As a result, the front wheel would turn toward the pedal side, and the bike would swim like a salmon heading upstream. But the further ahead you move the pivot (headset), and the closer to your hands, the straighter the bike will climb. With the shorter stem, you stay over the bike, and the bike tracks straighter, making it climb very well indeed.

Short chain stays

Genesis bikes use ultra-short chainstays. This positions the rear wheel more directly under your butt. With more weight on the rear wheel, you get better traction uphill, and the tire bites better when you apply the rear brake.

Short chainstays also moves the pivot point for doing wheelies. With a Genesis bike, you can easily lift the front wheel when it's time to bunny hop a water bar or climb over a small log.

Steep seat tube

Genesis bikes, like most Fisher models, have a steep seat tube angle. The duty, and the effect, of the seat angle is to place the saddle where you need it for support when seated pedaling. The seat angle also interacts with the top tube length to describe the position of the head tube relative to the bottom bracket. For every

degree of seat angle, the top tube is compensated about 10mm. In other words, for every degree the seat tube is steepened, the top tube becomes about 10mm shorter. When comparing geometry charts, a bike with a steep seat tube may look like it has a shorter top tube than it actually does.

The function of the steep seat tube is to place the rear wheel more underneath you. This is useful when you transfer from a seated to a standing position. As you move from a seated to a standing position (or the opposite), you don't have to move as much to maintain traction. It becomes easier for you to 'attack' a climb.

Who's it for?

The features of Genesis geometry were originally dreamed up by Gary Fisher, for his own riding. As we point out in "Gary Fisher: A History", Gary has done a lot of racing. But the same benefits that get a racer around a course faster will also add pleasure to a leisurely ride on the weekend.

Genesis bikes are more stable, especially in more technical terrain or on steep downhills. Genesis bikes allow quick, precise steering. Genesis bikes climb really well, especially for those who like to stand out of the saddle.

With these features, Genesis bikes offer a superior ride to anyone looking for performance off the pavement.

LeMond Geometry- A different perspective

LeMond geometry is different than many of the bikes on the market today. There are many explanations for this, some useful, some not so well thought out. We'd like to suggest a different perspective here.

What's different about the geometry?

First, let's talk about what the differences are. There are several key points which vary from some bikes on the market today. The differences may be small, but when combined the effect is definitely noticeable. Understanding how they work will help you explain the 'feel' to a potential customer and how it will benefit their riding.

- Reduced head angle.

  By slightly reducing the frame's head angle, trail is increased. The steering is more stable and slightly slower.

  Greg has said that when Pros are descending the Alps at 80kph, they need bikes that hold a line well, not steering that is quick and reactive. When descending fast, Pros use every inch of road width. They aggressively lay the bike into a corner knowing they can't change their line. With such a narrow margin of error, it's more important that a bike hold the line than be quick turning. Greg's geometry adds stability, especially when combined with other facets of the design.

- The bottom bracket is slightly lower.

  A lower bottom bracket lowers your body on the bike, and your center of gravity. When you are closer to the ground, the bike is more stable. It's true that this reduces pedal clearance, but at the extreme cornering angles and high speeds of a Pro road race the riders have their inside pedal up in the corners anyway. To Greg, feeling secure while eating or removing a rain jacket is more useful than extreme pedal clearance.

- Longer chainstays

  Increased wheelbase adds comfort and stability to a bike. For a road racer, this allows them to relax on the bike. If they expend less energy throughout the entire race, they will have more energy when the crunch comes. Shorter chainstays may add stiffness to a bike during a hard effort, but when sprinting for a stage win Greg found that feeling fresh was more useful than a stiff bike.

- Increased top tube length

  If you only look at top tube numbers, Greg's geometry may look really long. However, under a more accurate analysis the front/center is actually comparable to other good road bikes. The difference is that the seat tube is laid back. When the seat angle is laid back, it's normal for the top tube to increase in length.

- Reduced seat angle

  Some say this is to accommodate a long femur (thighbone), but good bike fit relies on more than bone length; it also considers the physics of riding.

  Another theory is that pushing the saddle rearward allows you to "pedal early", or apply pedal pressure earlier in the pedal rotation as it goes from the top (12 o'clock) position.

  While either of those theories may apply in some cases, an analysis of biomechanics indicates the primary benefit of the slack seat angle is more powerful climbing through hand opposition.

  Examine the dynamics of a rider in the saddle on a tough Tour climb, say something 10km long and in excess of a 10% grade. When seated on the bike most climbers ride with their hands on the top of the handlebars. This allows comfort and good breathing. They don't need to be in the drops, because climbing speeds are low enough that aerodynamics do not have much effect.

  As the grade increases the pedal force increases, assuming race pace at a constant cadence. As pedal force increases, so do the opposite forces lifting you off the saddle. The force stabilizing a seated rider is partially the friction created on the saddle by gravity, partially the position of the hands relative to the saddle. As pedal force increases, it takes more force to stabilize your body. Since gravity does not increase, it requires additional opposition from your hands to keep your body still in the saddle. Rather than move your hands (and handlebars) to oppose your feet, the saddle is moved back so that the bars are further away. This position improves the opposition of your hands to the force of your legs.

  In order to allow the saddle to be moved back further, the seat angle must be more laid back. As an extra benefit, moving the seat back tends to flatten your back, so after you've crossed the col you can decrease your aerodynamic drag on the downhill.

Does it take a special body type to ride a LeMond bike?

From the previous discussion it should be apparent that unless you require a very forward saddle position, you should be able to ride a LeMond. Those who want to ride in a more forward attitude also have the option of using a zero-setback seatpost.

What about the 'LeMond position'?

It's true that Greg used a very long position from the saddle to the handlebars. If you move your center of gravity relative to the wheels, it changes the way the bike handles. Greg's long, laid out position allowed him to achieve good pedaling opposition yet maintain optimum weight distribution on the bike for handling those fast downhill corners. The resulting aerodynamic benefits were an added bonus.

LeMond Geometry Summary- Rider Benefits

The benefits of LeMond geometry are really threefold. First, LeMond bikes are built to be comfortable so you expend less energy as you pedal. Second, they allow a more rearward position that adds climbing power. Last, they handle really well; when put into a corner they are solid and predictable at high speeds, and a synergy between you and your bike (some call it a feeling of 'one-ness' with the bike) means LeMond bikes don't require extra vigilance as you ride.

Women on Bikes

Most bikes are built for men

For years women have been riding bikes designed partly, if not totally, for men. If you were one of the lucky ones, your dealer substituted a few parts which made a men's bike work pretty well for you, especially if you are a taller woman.

Adaptation and adjustability

Fitting bikes is a combination of adjusting a bike and adapting the rider.

Larger bike are more adjustable, since their stem lengths are usually of average length and rise. Changing to a shorter stem reduced the reach to the bars, and changing stem angle on a mid-length or longer stem could significantly effect handlebar height. On a small bike, the stem is likely to be quite short to begin with. If an even shorter stem is desired, the right extension may not exist. Changing the rise angle of a very short stem has little effect on handlebar height so vertical adjustment is not readily available, either.

When analyzing movement of a person, the range of motion is critical to efficiency and power. If you move a fit component on a bicycle a given amount, it will effect the range of motion of a person with shorter limbs more than a person with longer limbs. Simply put, when fitting a bike a shorter person has less adaptability than a taller person. Smaller bikes generally have less adjustability than big bikes, so it's more important that a small bike fit just right.

Smaller women rider smaller bikes. With less available adjustment on their bikes, and less adaptability of their bodies, small women have suffered fit problems that lead to performance gaps. Serious riding on the road is much more fun when your bike is comfortable and handles well. Off road, anything less can make cycling really unpleasant.

More than a dropped top tube

The new Gary Fisher Genesisters and LeMond women's bikes are spec'd with women's specific components, like saddles, bars, and crank lengths. The Genesisters mountain bikes have women's specific suspension forks with softer springs.

More importantly, these frames feature a geometry designed for women. So while most 'women's' bikes make due by just tweaking a men's bike with a few add-ons or maybe a dropped top tube, we completely redesigned these bikes to meet the needs of performance oriented smaller women.

Women sit on a bike differently

There are several major differences in how men and women sit on a bike. The most obvious and most discussed of these is the difference in pelvic structure. A woman's hips are wider, and the bony protuberances we all sit on, called ischial tuberosities, are also wider apart. This accounts for the popularity of women's saddles that are wider in the back than a man's.

A man's pelvic structure allows him to roll his pelvis forward on the saddle and lean forward aggressively. For most women, this hurts. The result is a woman sits on a bike seat with her pelvis in a more upright position. For the smaller woman on a man's machine, this means her lower back is curved and the handlebars are hard to reach.

Adjusting geometry to fit women

Fisher and LeMond engineers addressed these issues in several ways in the Genesisters and LeMond women's geometry. To support their wider pelvis, women appear to sit further back on the saddle. With a steeper seat tube, the seat can be positioned placing the legs over the cranks for optimal power, while her butt is on the most comfortable part of the saddle. To adjust the reach for a more upright angle to the back, a shorter top tube is used. The handlebars are placed higher by using a taller head tube, so her back and arms can be at a relaxed angle for steering control and shock absorption.

These adjustments put a woman in a more comfortable and powerful position. That makes hills easier and long rides less tiring. A common complaint among women riders is back pain, and the correct position goes a long way to alleviate this problem.

Some of the corrections Fisher made to these frames can be made to a men's frame with similar results, especially with a taller woman's bike where there is more adjustment. But any frame will handle its best with the weight distribution applied in a certain way, and a men's frame is designed to have a man's heavy shoulders pressed firmly onto the handlebars in a bent over position. When you put a woman, who already has lighter shoulders, in a more upright position, there is much less weight on the front wheel. The result is less steering stability and the bike becomes harder to control.

Steering and weight distribution

Steering stability on a bike is a combination of trail and centering force. Trail is the distance from the steering axis at the ground to the tire contact patch. But for trail to make a bike stable, there needs to be weight on the bars to apply a centering effect. The greater the weight on the bars the more stable a given bike will be. This is why a touring bike with front panniers is more stable than it would be with only rear panniers.

A smaller man on a small bike still applies plenty of centering force for good steering and handling. To achieve a similar amount of steering stability for a small woman in a more upright position, more trail is needed. Not only does stability lend confidence to the rider, it also means that less strength is required to hold the bike in a line. This again addresses an important difference between men and women, that of upper body strength. By decreasing the head angle of the women's bike, she will get similar handling with a similar 'feel' to that designed into a man's bike for a man.

Good fit defined

When you are pedaling a bicycle, you touch the bike in three places; pedals, saddle, and handlebars. For the bike to fit you properly, these three points must interface with your body in a comfortable and functional way. In other wards, if the saddle, pedals (and shoes), and handlebars (plus grips and controls) do not fit your feet, hands and seat, the bike won't work its best for you.

The three points of contact must be oriented correctly for you to benefit. Properly oriented, your muscles will work at their optimum. No muscles, ligaments, or tendons will be strained. Aerodynamic drag will be at a minimum.

In addition to the relatively simple task of accommodating your body for comfort, the bike should ride better. Your center of mass should be positioned over the bike to accentuate your pedaling power while also balancing you over the wheels for the best bike handling.

Put more simply, good fit results in your feeling completely relaxed on the bike over long periods of time. If your bike fits well, you should not feel like you need to squirm around, nor should you have excess tension in your shoulders, arms, or anywhere else. Basically, you should be comfortable, first and foremost.

How performance effects fit

The higher the performance level of your riding, the greater the forces applied to the bike, and thus to you. Forceful riders press harder on the pedals. They corner harder, and when riding off road their extra speed generates higher forces when they hit bumps. The forces applied to you on the bike are the result of a Newtonian law that states all actions have equal and opposite reactions. When you are riding, higher forces demand better fitting if comfort is to be maintained.

However, in some cases greater forces may be found when your are riding less forcefully. If you are not pressing firmly on the pedals, you're not lifted by the pedals. As a result, the casual rider often applies their entire body weight to the saddle.

Regardless of the level of your riding, our definition of good fit holds true. Every rider should use the least muscle energy possible to support themselves on the bike, to stabilize themselves on the saddle, and to apply power to the pedals. To be relaxed requires that you be as comfortable as possible.

Fit info in the Tech Manual

On the specifications page for each bike model, we have listed the Fit items for that model, including the lengths, angles, or widths of the handlebar, stem, crank, and seatpost.

RIDER HEIGHT

In addition to the measurements of the hard parts, we list Rider Height. This dimension is the median height of the average rider who might fit this bike in an average way, with its handlebars at their highest position. That's a lot of qualifiers, but the information can still be valuable in helping you quickly fit a given model. Some models do not include Rider Height, either because that model offers too much fit adjustment to be defined, or simply because it's a one-size-fits-all. So here's all those qualifiers explained.

Median Height-

Different bikes offer different ranges of fit. Generally, the more bent over you are, the more noticeable a poor fit. Most bikes fit a range of heights. Different bikes will have a different range. We have not attempted to define how wide the fit spread is on a given model; the variables are too many. Instead, we have listed the median, or middle. In other words, if we say a bike fits someone 70" tall it may fit someone from 69 to 71", or with a wider range possibly from 67 to 73". As you consider this data, you're probably best off choosing the size closest to your height.

Average Riding Style-

When we design or spec a bike, we have a certain style of riding in mind. As an example, when we spec a Supercaliber, we're expecting that the bike will be either ridden by a racer, or someone who likes to ride like a racer. That doesn't mean you can't ride a Supercaliber on the bike path, but someone buying a Supercaliber exclusively for bike path riding isn't riding in an average way for that model, and will likely want to tune the fit to their purposes.

Average Fit-

We've studied a lot of riders over the years, and we can draw some conclusions about the way a bike fits the average person. But some folks aren't average. Those with specific preferences, injury, or other abnormalities may require or prefer a non-average fit. As examples, consider two people of the same height but different weight. At 6' tall, a 130 pound person will sit on a bike differently than someone also 6' tall who weighs 260. Incidentally, neither of these folks would fit our definition of average.

There are many factors which effect bike fit. Certainly bone lengths is one, but perhaps surprisingly, it's not always the most important. Other influential factors include flexibility (and thus to some extent your age), somatotype (your general body shape), overall conditioning (muscular strength and body mass distribution), gender, and riding style. If you are female, or in any way older, out of shape, over weight, or not accustomed to cycling, you will probably want to select the larger of two bike sizes that would fit you, simply to get the higher handlebar position that comes with a bigger frame. It's easy to put a shorter stem on to reduce the reach to the bars. It's not always easy to find a stem which can adequately raise the handlebars on a frame that is too small.

Highest handlebar position-

We made these fit estimations with the stem at its highest point. With Ahead stems, that means all the spacers were under the stem. With quill stems, the handlebars reach their maximum height with the stem pulled up to the minimum insertion line. With adjustable stems, it's calculated with the stem at a 35 degree angle. Lowering the bars, or changing the parts, changes the fit of the bike as well as its Rider Height.

Sugar = B*Link

When we introduced the Fisher Sugar in 2000, it set the suspension market on its ear. No bike before it offered the unique combination of Genesis handling and B*Link technology. The Sugar is a lightweight full suspension package that handles like a hardtail. It's a successful blend of several Fisher features; Genesis Geometry, Aluminum frame technology, and American manufacturing quality.

The Sugar has already proven itself to be a top level performer. Mary Grigson, on a Sugar, was one of the first riders to win a World Cup race on a full suspension bike. Clearly, the new Sugar is fast. With Genesis geometry, it's also an excellent handling machine. And it doesn't waste your energy. Everything a perfect full suspension bike should be, so even on an afternoon spin, the Sugar makes your riding more fun.

Genesis Geometry

The Sugar incorporates Fisher's Genesis Geometry. Gary's original concept was a bike that would be more stable in situations where the rider's center of gravity rolled them forward over the handlebars. While solving this problem, Gary also created a bike that better handles the higher speeds of Pro racers. A sneak peek with a tape measure into the pits at a NORBA National will reveal that many racers, on bikes with different brand names, are borrowing from Gary's geometry.

B*Link suspension design

The Sugar uses a special linkage to activate the rear shock, called the B*Link. The B*Link adds lateral rigidity to the frame, so the Sugar steers and handles like a hardtail. Likewise, the relatively short travel (by Fisher standards of the past) of 3" (75mm) gives a hardtail feel to the bike. However, the pivot location and resultant progressive suspension and compression ratio allows the Sugar to be plush on small stuff, yet not bottom on the big hits. The end result is an almost invisible suspension feel; it takes the edge off, but you don't really notice the suspension movement. Combined with low weight, these features make the Sugar the ultimate all-round and racing suspension bike.

Some designs offer more

While other suspension systems may offer some similar benefits to those of the Sugar, they have some things the B*Link design doesn't have. They have tiny little pivots crammed into the tight space by the rear dropouts. Those little pivots add weight to the bike, and at their attachment points the frame has to be designed with extra reinforcements that also add weight. As an added problem, if the pivots aren't perfectly aligned, they wear prematurely, so the extra alignment work adds cost to the bike.

Those dinky little pivots also have low torsional rigidity, allowing unwanted flex. As the suspension is activated on a bike with imperfect alignment and pivot flex, their little pivots will loosen up , which causes additional frame flex and squeaking.

Smart design

By carefully designing the pivot locations, swingarm, and links, Fisher engineers were able to create a suspension system that avoids those troublesome little pivots back by the dropouts. The key is finding the exact lengths and arcs to do this without undue stress on any frame members. Still, there is some flex of the frame as the suspension is activated. With each suspension stroke, there is a slight change in angle of the chainstays and seatstays.

Without careful design, this tiny flexing could cause fatigue of the frame resulting in breakage. Fisher engineers used some of our vast array of materials and manufacturing technology to avoid welding in the flexed area. Instead of welding, we use bonding technology to join the stays and rear drops. By using a space age epoxy adhesive, we achieve incredibly strong frame joints that don't have the inherent stress (and stress risers) of welding. This clever design avoids fatigue stress.

B*Link benefits

Our smart B*Link design completely avoids the annoying little rear dropout pivots with a light, rigid design. All you give up with B*Link is the tiny pivots and the headaches. B*Link stills gives you what you need in a full suspension design. The tires follow the terrain for maximum traction, pedal interrupting bumps virtually disappear, and big hits are swallowed up without bottoming the springs.

Designed for an air shock

For a cross-country design like the Sugar, we wanted the lightest shock possible. By itself, just the spring of a coil/over shock can weigh more than an entire air shock.

Air shocks have progressive spring rates. For each increment an air shock is compressed, the rate of change of the spring rate goes up (gets stiffer).

However, air shocks can be too progressive. In this scenario, in order to have a bit of sag in the system, the progressive nature of an air shock can prevent you from getting all the travel the bike has to offer.

The shock actuation of the Sugar is a slightly falling rate. For each increment of swingarm travel, the actuation rate decreases (compresses less). This allows the Sugar to be set up with some sag, yet get full travel over big bumps. Basically, the Sugar design makes an air shock feel more linear.

The Sugar has a unique blend of a progressive shock combined with a low leverage ratio. This, coupled with a very specific pivot location, takes rear suspension performance to a level that is instantly distinguished over other designs. The results are greater efficiency in both terrain response and the transfer of your energy to the rear wheel, while being almost undetectable.

More durable pivots

One last concern of our engineers was pivot durability and maintenance. Although you may not appreciate it on a test ride, pivot durability plays an important role after you've owned the bike for a while. As suspension pivots wear, they become loose. This looseness translates into frame flex, or "wag", which can allow the two wheels to track independently. You don't want this. In addition, worn pivots tend to squeak. Nothing is more annoying than listening to your bike squeak with every pedal stroke. So Fisher engineers borrowed technology from the thousands of proven Fisher Joshua bikes on the trail; Teflon impregnated composite bearings.

In the Sugar design, the bearings ride on very wide axles. The distance between the bearings, on a given axle, is what helps lateral stiffness in a bike frame.

If an axle is only a few millimeters long (like those crammed in by the dropouts), then it offers little resistance to lateral and torsional flexing. That's why the Sugar doesn't use this type of pivot at the dropouts.

Would you rather work on your bike than ride it? Even the ultimate suspension design makes for a lousy bike if it requires constant service. That's why the Sugar uses a totally sealed, non-metallic pivot bearing. Think about this; which wears faster, a suspension fork (with non-metallic bushings) or a headset (with ball bearings)? If you answered "headset", you're correct.

When you hit a bump with the rear wheel, the force is transmitted through the pivot (before it gets to the shock). With ball bearings in a pivot, the contact area of the bearings is extremely small, and metal to metal. It's inevitable that this contact point is going to wear fast. With the Sugar, the contact point is huge, and the bearings actually have a small amount of shock absorption capacity. This combination of features means you can ride a Sugar for thousands and thousands of miles without any maintenance, and without any noise or rear end wag.

Industrial strength

The original development of the Sugar pivot technology was for use in industrial quarrying, where huge machines work under monstrous loads in a dirty environment. Gosh, almost sounds like mountain biking!

Bearing force threshold

If you take all the parts off a suspension bike and remove the rear shock, you'll find several things. First, it becomes much easier to see what the suspension does when the rider hits a bump.

Second, you will see that there are differences in the amount of force it takes to initiate suspension movement. Brands with ball bearings in their pivots point out that the Sugar, especially when brand new, takes some force to move. Generally, it take somewhere around 10 pounds of force at the rear axle to move a brand-new Sugar swingarm.

Is this force threshold interfering with the bike's performance?. As you ride your Sugar, the composite bearing deposits material onto the nickel-less anodized pivot axle. After break-in, the bearing surface becomes in effect Teflon against Teflon. Since the composite is much slipperier than the aluminum, the force required to activate the pivot becomes much less after break-in.

The other thing to consider is this- once you exceed the activation threshold, the 'stiction' of the bearing no longer effects the travel. You can feel this on the workstand. When you sit on the bike, you have applied way more force than ten pounds to the rear axle. The spring stores the energy from you compressing it, so when you get off, about the same force works to return the shock to its un-sagged length. So this 'test' of the bearing stiction has little to do with how the bike actually works.

Basically, we feel the huge bearing surface of our design, coupled with its low weight and totally sealed nature, make our pivot far superior to a ball bearing pivot.

NEW FOR 2002

New frame tubes = lighter weight and lateral rigidity

The 2002 Sugar uses our new frame material, ZR9000. The key to this new material is that while the frame is now 15% stronger, it is at the same time 15% lighter, and way more fatigue resistant.

The 2002 Sugar gets a new downtube with a much greater diameter. This makes the frame laterally and torsionally stiffer. Combined with other new frame features, the 2002 Sugar is over 7% stiffer!

We also took advantage of our carbon fiber technology, with both carbon chainstays and carbon seatstays. We ended up with a frame that's 1/4 pound (over 100 grams) lighter!

Redesigned B*Link = lateral rigidity

The new B*Link is stiffer laterally than earlier versions. However, to achieve this improvement, it was necessary to redesign its attachment points. This means the new B*Link cannot be retro-fitted to previous Sugars. Likewise, it cannot be interchanged with the Sybil link on the Sugar+.

New swingarm without 'seatstay bridge' = tire clearance

By using very large diameter 'seatstays', we were able to remove the brake bridge. Normally the bridge is needed to stiffen the area around the brake bosses. With the super-large diameter tubes we designed, we were able to remove the bridge completely while maintaining adequate brake rigidity. The result is tons of tire clearance, now fitting even up to a 2.35 tire.

SUGAR SUSPENSION SETUP

Cane Creek shocks have two springs, a 'positive' and a 'negative'. The positive spring works to make the shock longer, while the negative spring works to make the shock shorter. The negative spring works only during the first part of the shock stroke, in effect helping small bumps to compress the shock. This makes the Sugar feel plush. After a small amount of shock compression, the negative spring ceases to have an effect, and just the positive spring resists large bumps.

With a Cane Creek rear shock, pump up the pressure to around 25-35 PSI less than your body weight in LBS (see chart below). With models that provide damping adjustment, try 2-3 turns in from fully fast. This is a good place to start. You should experiment in small increments to find what works best for your position, terrain, body weight, and riding speed.

Body Weight LBS	/Preload PSI	Body Weight KG	/Preload ATM
100	75	45	5.43
110	85	50	6.04
120	95	55	6.64
130	105	60	7.24
140	110	65	7.85
150	120	70	8.45
160	130	75	9.05
170	140	80	9.66
180	150	85	10.26
190	155	90	10.86
200	165	95	11.47
210	175	100	12.07
220	185	105	12.67
230	195	110	13.28
240	205		

Sugar+ = Sybil link

The Sugar+ borrows heavily from the hugely successful Sugar design, but expands on that success to create a more versatile bike. By providing a way to adjust the suspension travel, the Sugar+ can exactly mimic the design of the Sugar, or go into long travel, adventure mode. And this magic act takes just about a minute. The only real downside is that the Sugar is lighter, but in reality one should expect that from a more expensive bike, anyway.

Adjustable Travel

The Sugar+ allows you to choose from two configurations, or anywhere in-between. In the short travel mode, the Sugar+ has the exact same geometry and travel as the Sugar (2.8" / 70mm). By moving the rear shock into its long-travel position, you increase the rear wheel travel to 4.1 inches (100mm). Then dial the fork to its 100mm travel position (some forks may offer even more travel). The only change in handling comes from a resultant 14mm increase in bottom bracket height. The sweet ride of Genesis geometry is still there. Even cooler, you don't have to change the pressure in the rear shock when you move it!

Genesis Geometry

The Sugar+ incorporates Fisher's Genesis Geometry. Gary's original concept was a bike that would be more stable in situations where the rider's center of gravity rolled them forward over the handlebars. While solving this problem, Gary also created a bike that better handles the higher speeds of Pro racers. A sneak peek with a tape measure into the pits at a NORBA National will reveal that many racers, on bikes with different brand names, are borrowing from Gary's geometry.

Sybil link suspension design

The Sugar+ uses a special linkage to activate the rear shock, called the Sybil link. The name "Sybil" was a taken from a famous case which profiled multiple personalities. The name Sybil can also be found in mythology, a seer who could predict the future. Either way, it's a good description of the capabilities of the Sugar+.



Like the Sugar's B*Link, the Sybil link adds lateral rigidity to the frame. The box construction with parallel through-axles at either end means that the link resists torsion applied by the terrain pressing against the rear wheel. What all this means is that the Sugar+ keeps the rear wheel in line over rough terrain, so your Sugar+ handles like a hardtail, but with the extra cush you want in a long-travel suspension bike.

The pivot location and resultant progressive suspension and compression ratio allows the Sugar+ to be plush on small stuff, yet not bottom on the big hits. The end result is an almost invisible suspension feel; it takes the edge off, but you don't really notice the suspension movement.

Some designs offer more

While other suspension systems may offer some similar benefits to those of the Sugar+, they have some things the Sugar+ design doesn't have. They have tiny little pivots crammed into the tight space by the rear dropouts. Those little pivots add weight to the bike, and at their attachment points the frame has to be designed with extra reinforcements that also add weight. As an added problem, if the pivots aren't perfectly aligned, they wear prematurely, so the extra alignment work adds cost to the bike.

Those dinky little pivots also have low torsional rigidity, allowing unwanted flex. As the suspension is activated on a bike with imperfect alignment and pivot flex, their little pivots will loosen up , which causes additional frame flex and squeaking.

Smart design

By carefully designing the pivot locations, swingarm, and links, Fisher engineers were able to create a suspension system that avoids those troublesome little pivots back by the dropouts. The key is finding the exact lengths and arcs to do this without undue stress on any frame members. Still, there is some flex of the frame as the suspension is activated. With each suspension stroke, there is a slight change in angle of the chainstays and seatstays.

Without careful design, this tiny flexing could cause fatigue of the frame resulting in breakage. Fisher engineers used some of our vast array of materials and manufacturing technology to avoid welding in the flexed area. Instead of welding, we use bonding technology to join the stays and rear drops. By using a space age epoxy adhesive, we achieve incredibly strong frame joints that don't have the inherent stress (and stress risers) of welding. This clever design avoids fatigue stress.

More durable pivots

One last concern of our engineers was pivot durability and maintenance. Although you may not appreciate it on a test ride, pivot durability plays an important role after you've owned the bike for a while. As suspension pivots wear, they become loose. This looseness translates into frame flex, or "wag", which can allow the two wheels to track independently. You don't want this. In addition, worn pivots tend to squeak. Nothing is more annoying than listening to your bike squeak with every pedal stroke. So Fisher engineers borrowed technology from the thousands of proven Fisher Joshua bikes on the trail; Teflon impregnated composite bearings.

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NEW FOR 2002

Although the Sugar+ may look like last year's Sugar, it actually has many, many improvements.

New frame tubes = more lateral rigidity at the same weight

The 2002 Sugar uses our new frame material, ZR9000. The key to this new material is that while the frame is now 15% stronger, it is at the same time 15% lighter, and way more fatigue resistant.

The 2002 Sugar gets a new downtube with a much greater diameter. This makes the frame laterally and torsionally stiffer. Combined with other new frame features, the 2002 Sugar+ is over 7% stiffer!

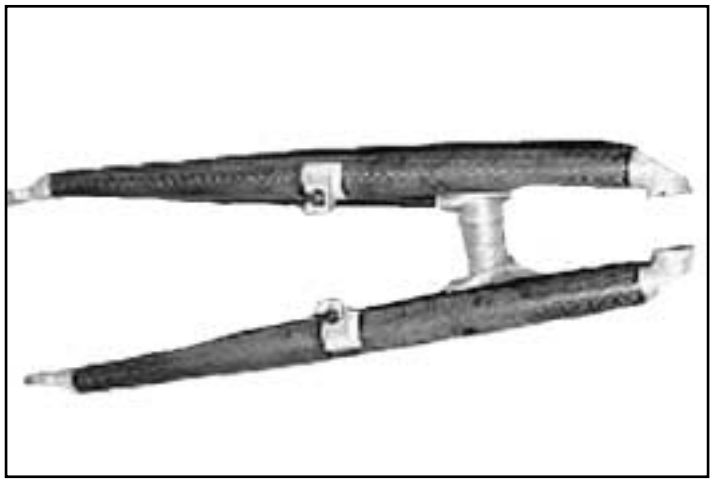
Careful design allows us to put all these features into a Sugar+, but at the same frame weight as last year's Sugar.

Sybil link = adjustability and lateral rigidity

The new Sybil link is stiffer laterally than earlier versions. However, to achieve this improvement, it was necessary to redesign its attachment points. This means the new Sybil link cannot be retro-fitted to Sugars, neither 2002 or earlier.

New swingarm without 'seatstay bridge' = tire clearance

By using very large diameter 'seatstays', we were able to remove the brake bridge. Normally the bridge is



needed to stiffen the area around the brake bosses. With the super-large diameter tubes we designed, we were able to remove the bridge completely while maintaining adequate brake rigidity. The result is tons of tire clearance, now fitting even up to a 2.35 tire (carbon fiber version from Sugar shown).

Genesisters model

The Sugar 3+ is now offered in Genesisters geometry, Gary's Genesis concept executed to fit women.

Other details

The Sugar+ frame accepts V-type or International mount disc brakes.

SUGAR+ SUSPENSION SETUP

One of the cool features of the Sugar+ concept is that once you've adjusted the rear shock for its 'standard' travel mode, you don't have to change the preload. When you move to the long travel position on the Sybil link, the change in actuation ratio means the long travel adjustment will be appropriately softer.

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Tubeless Compatible Technology

Snakebite

One of the more common mechanical problems encountered on a mountain bike ride is the pinch flat. With your tire pressure set on the soft side to enhance traction, you run over a sharp object, like a rock. The soft tire is compressed between the rock and the rim, another hard spot. Caught in the middle of this squeeze play is the tire and the lowly inner tube, made of soft rubber. The tire can resist the compression because it is fairly thick, and has reinforcing threads running through it. The poor inner tube has nothing. Under pressure, the inner tube rubber separates and gets treated to the mountain bikers' nemesis: snakebite, denoted by a pair of matched holes in the inner tube.

A cure for snakebite

Until recently, the only cure for snakebite was to increase the air pressure in the tire. Unfortunately, this solution causes its own problem; reduced traction. To solve this problem, a consortium of rim and tire builders came up with a novel approach; why not eliminate the tube? Following this path they came up with a design using a dedicated tire to seal to a dedicated rim and hold air without a tube, dubbed UST.

The downside of UST

The UST 'solution' has a host of its own problems. First, it's very expensive. The key to UST is a rim without spoke holes through it's inner wall. This design requires a special method of rim manufacturing and spoke installation. Second, this special wheel doesn't use conventional spokes, so to get UST benefits you have to buy an entire wheel. Third, a UST rim will not work with a standard tire. And lastly, there is a very limited selection of tires and tread patterns that will fit this special rim.

A second opinion

We considered the pros and cons of UST tubeless technology and saw that there was room for improvement. By finding a different method of containing the air, we were able to use conventional wheel building practices. Not only does this make it less expensive to buy into the system, it also means the wheels are fully serviceable at your local dealer which is a real plus for you. Second, our rim design is compatible with standard mountain bike tires, given that you use an inner tube. With both UST and our Tubeless Compatible system, going tubeless requires a special tire that has a sealing layer on the inside of its casing to prevent the air from simply rushing out. Conventional tires don't have this air-sealing layer. But again, you can use a conventional tire on our tubeless compatible rims, you just have to use a tube. In addition, with our system you can use the UST tubeless tires.

How did we do it?

The key to our Tubeless Compatible system is a special rim and its mated rim strip. This rim strip is made of a thermoplastic rubber material, so it's impervious to air. Installed correctly in the special mated rim, it seals tightly to the tire to prevent air escaping through the spoke holes. The rim's hook allows greater contact with the tubeless tire's smooth, enlarged bead so these two surfaces also seal up tight. The inside of the tubeless tire has a special coating to prevent air from escaping through the tire casing. When these features are all in order, no tube is needed. Just install a special presta valve stem into the rim, and inflate.

Does the system absolutely eliminate air leakage?

Have you ever noticed that you occasionally have to pump up your tires (well, really it's your tubes), even if they don't have a puncture? In a similar fashion, a properly mounted tubeless tire can 'bleed' air. We expect that this will amount to about 4PSI per day.

For display purposes, 2002 complete bikes with tubeless tires will include an installed inner tube. Since inner tubes have a slower bleed rate, the store won't have lots of bikes sitting on the sales floor with soft tires.

What if I run over a nail with tubeless tires?

A tubeless tire functions like a tire with a tube in it. It's just that the tire holds the air, not the tube. So if you run over a large, sharp object that can penetrate the tire casing, it will probably flatten the tire just like with an inner tube.

Also like an inner tube, you can probably patch the hole (from the inside of the tire). The difficulty lies in determining where a tire is punctured. An inner tube is basically fully enclosed. A tubeless tire is not. If the source of the air leak is not immediately obvious, you may have a problem getting the tire inflated enough to locate the puncture. However, if you puncture while on the trail it's an easy matter to simply remove the special tubeless valve stem and install a tube.

That's not that bad. Anything else that could be considered a down side?

To inflate a tubeless tire, it must be in contact with the rim, tight enough to make full contact with the rim strip when at the bottom of the rim well. So the tires have to fit on the rim a little tighter. This makes them somewhat harder to install. The good side of this is that it does not take a compressor to initially seat the tire beads. A good hand pump will do. Or an air cartridge.

With a tire that fits this snug, you might not be able to install it barehanded. If you choose to use tire levers for installation or removal, it's important that you do not damage the rim or abrade the tire bead. If either surface is damaged, the roughened surface will likely allow a greater rate of air bleed from the mounted tire.

Tubeless Troubleshooting

If you are having trouble inflating a tire on a tubeless compatible rim, here are a few things to check.

Is the tire a tubeless tire? It should be clearly marked on the sidewall. Standard tires will not hold air without an inner tube.

Are the tire, rim, and rim strip clean and in good shape? Any puncture in the tire casing? Any dirt or abrasion at the critical sealing points can cause air to escape. Is the tubeless valve correctly installed? It should sit down in the channel of the rim, pressed firmly against the rim strip.

Are the beads seated in the rim? If a tubeless tire is only inflated to 30 or 40psi, the beads may not have properly 'locked in' to the rim strip. Try inflating the tire to around 50psi, and listen for the 'snap' as the beads lock. Then reduce pressure to your preference.

Bontrager Wheelsystems wheels set a new standard in wheel performance. Bontrager Wheelsystems wheels are light, fast, and rock solid, with a unique set of application-specific features. Since different types of riding place different demands on wheels, Bontrager Wheelsystems applies the features to each wheelset which will optimize its performance for that use. In other words, each wheelset draws on the best specific set of the following possible features: paired spoking, OSB (Offset Spoke Bed), front-or-rear specific rims, top quality spokes (aero in some applications), and special hub designs.

Engineered wheels

Bontrager Wheelsystems wheels are highly engineered; every aspect of wheel performance has been considered, and redesigned when necessary. An extensive battery of tests has proven these to be truly outstanding products in aerodynamics, low moment of inertia, and durability. Since we proudly list the weights, it's easy to see the Bontrager advantage in this parameter. But with Keith Bontrager, durability is always a characteristic of paramount importance. These wheels are no exception. The battery of tests which every Bontrager wheel design must pass is truly astonishing.

As an example, one torture test involves placing 300 pounds on the axle of a wheel, and rolling over fixed wooden 2x4s at 30 MPH. Don't try this at home! This test regularly destroys many of our competitors wheels before they meet our minimum standards. At the same time, we insist that all Bontrager Wheelsystems wheels exceed them.

The key to durable wheels

The most important aspect of wheel building is achieving even spoke tension, within a range of acceptable tension. Certainly some of the responsibility here lies on the careful hand-finishing applied to all Bontrager Wheelsystems wheels. But even the best trained hands can't achieve consistent, even spoke tension if the wheel hasn't been designed properly.

Design review

When engineering wheels, every aspect of the wheel and its components must be considered as a group. Rim design effects lateral and radial stiffness, spoke bed strength, and in extreme cases impact resistance. Spokes must be selected with the right strength and elongation. Hub design must provide support for the spoke head, and flange width effects lateral stability. All the features must match up exactly to optimize the design's strength-to-weight ratio.

The missing factor

On any bike, the rear wheel sees more stress than the front wheel. The rear wheel supports a greater percentage of the rider's weight. The rear wheel must accommodate the freewheel or cassette, yet center the rim over the ends of the axle. And while the front wheel can rotate during side loading or deflection, the rear wheel is trapped between the rigid chainstays. In riding, this can greatly increase side-loading of the wheel.

Over the years, many approaches to increased rear wheel strength have been taken. Rather than attempt to review all those here, we'll simply present the goal of the Bontrager rear wheel; create the best possible balance of spoke tension from the drive side to the non-drive side of the rear wheel. Forget bracing angles, or distributing the pulling load over more spokes. As we said earlier, the greatest source of wheel failure is uneven spoke tensions. Since the inherent design of a multi-speed rear wheel creates a large difference in tension between left and right sides of the wheel, the best way to create a durable structure is to minimize this difference. Further, if a spoke is at lower tension than its neighbors, it can't effectively apply force to the rim.

Bontrager Wheelsystems rear wheels employ OSB (Offset Spoke Bed) rims and special hub designs with a more inboard left flange spacing. These features allow an increase in the left-side spoke tension. The higher left side tension allows the left spokes to apply torque transfer to the rim. They also provide increased strength through reduced lateral wheel flex. In other words, Bontrager Wheelsystems wheels are more efficient.

Bontrager wheels create a more evenly-tensioned structure, and thereby reduce the overall stress on the individual components. The result is that Bontrager Wheelsystems wheels offer unmatched strength and durability.

Bontrager Wheelsystems stay true longer

As your bike rolls down the road, your wheels are loaded with your body weight as they turn. As they do, the point at which the road resists the force of your body weight is moving on the wheel. This moving force creates a change in spoke tension such that every spoke on the wheel is seeing a loose-tight-loose-tight-loose-tight cycle. This cycle creates fatigue in the spokes, which will eventually cause them to fail. In some cases, fatigue can even cause a rim to fail. The greater the difference in spoke tension within the wheel, the larger the variations in tension through this cycle, and the greater the fatigue on the wheel.

More immediately, long before parts fail due to fatigue, the wheel may come out of true. As the tension is removed from a spoke, the nipple can more easily turn on its threads. This results in you spending more time working on your bike, or having it serviced. With Bontrager Wheelsystem wheels, the design creates more even tensioning. Maintenance is therefore at a minimum.

The keys to a perfect road wheel

As we said earlier, Bontrager Wheelsystems employ a set of specific features to achieve their high level of performance. All wheels benefit from low weight, durability, and low maintenance.

With road wheels, aerodynamics become very important due to the higher average speeds seen on pavement. One of the major influences on wheel aerodynamics is spokes. Many Bontrager road wheels use aero, or bladed, spokes to reduce wind drag. They also use reduced spoke counts, relying on Paired Spoke Technology to maintain

high wheel strength with fewer spokes.

On a bike, the front wheel sees the most wind resistance because it is the leading edge of the bike. The rear wheel is "drafting the seat tube", and is in much more turbulent air. For this reason, Bontrager road front wheels use a deeper, more aerodynamic rim than the rear wheel.

Mountain bike wheels have different needs

While road bikes benefit from improved aerodynamics, mountain bikes place a greater need on wheel durability and rigidity. They also sometimes require special configurations, like the ability to accept a disc brake rotor. Again, Bontrager Wheelsystems mountain bike wheels select those features which will best create the ultimate structure.

With disc-specific wheels, there is no need for a flat rim sidewall. This allows optimization of the rim shape to reduce weight. Placing a rotor on the front wheel creates an asymmetric spoke configuration that benefits from OSB (Offset Spoke Bed), thereby reducing the required dishing and providing more balanced spoke tension from left to right side of the wheel. Disc wheels also used crossed spokes, to efficiently transfer disc brake forces to the rim.

With rim brakes, Bontrager Wheelsystems incorporate tall sidewalls so that brake adjustment is easier, and pad wear has less effect on proper adjustment; taller sidewalls provide increased surface for the brake pad to mate to.

Like with Bontrager road wheels, Bontrager mountain wheels focus on balancing spoke tensions on the drive and non-drive side of the wheel. To do this, they employ OSB (Offset Spoke Bed) rims and special hub designs with modified flange spacing. These features greatly reduce the tension differentials from side to side, creating a stronger, more durable structure. The higher left side tensions allow more torque transfer to the left side drive spokes. They also provide increased strength through reduced lateral wheel flex. In other words, Bontrager Wheelsystems mountain wheels are stronger.

Truing Bontrager Wheelsystems wheels

Most Bontrager wheels employ standard, externally adjustable spoke nipples. The only exceptions are the Bontrager X-Lite Carbon Road wheels, and the Bontrager X-Lite Aero road wheels where a small aerodynamic benefit can make the difference between winning and losing a race.

Bontrager Road wheels use PST (Paired Spoke Technology) which require a slightly different technique to true. In many respects, truing Bontrager Wheelsystems wheels with PST is just like truing a conventionally spoked wheel. Each spoke has both a vertical and lateral component to its pulling force. As you tighten a spoke, it pulls radially in towards the hub, and laterally out towards the hub flange.

The difference is that on a Bontrager wheel with PST, the lateral force is directly opposed by its 'partner', the spoke adjacent to it. As the partner reacts to your tightening of a spoke, there is no further lateral force applied to the rim. Contrast that to a conventionally spoked wheel where each spoke has two 'partners'. As you tighten one spoke, it effects the tension, and thus the spatial position, of the two partners. This in turn effects the next outward pair, and so on.

When truing Bontrager Wheelsystems road wheels, PST gives you more control over both vertical and lateral rim deviations. If the rim is slightly out of true but very round, you can loosen one partner and tighten the other. The rim moves laterally, but not up or down. And since no other spokes are directly affected, you're done.

Vertical deviations

With wheels built in our factory, the tolerance allowed for vertical deviation is 0.5mm. A 23c tire with 120 PSI will exhibit more out-of-roundness than this.

Our wheel builders use a vellum, a highly sensitive truing stand that uses dial indicators driven by wheels pressing on the rim. When 0.5mm passes by the indicators on the vellum, the needles move about an inch. What looks like a mountain on the vellum will be totally missed by the rider, even at high tire pressures on smooth pavement. With an egg-shaped wheel where 0.5mm height change occurs over 1/2 of the wheel rotation, the out-of-roundness may be invisible with a normal truing stand. If that same 0.5mm deviation occurs in a short rim section, it's very visible to the naked eye.

With Bontrager Wheelsystems, the same 0.5mm vertical tolerance is allowed, but instead of an egg shaped wheel it can show up over a very short section of the rim. In either case, the rider will not feel it, nor will it effect the ride of the bike. Consider the much greater magnitudes in the out-of-roundness of a wheel. The tire will be out of round by 1-2mm on a 23c tire, more as the casing gets bigger. A rider sitting on the bike with that same 23c tire at 110PSI will compress the tire by another 2-3mm. And unless your roads are a lot better than here in Wisconsin, the road surfaces often have 5, 10, and even 20mm variation.

A note about the "little marks" on the rims

On 2002 Bontrager rims there is a small spherical indentation in the braking surface of the rim. This isn't a blemish, it's a wear indicator. If the braking surface has worn so that the indicator is no longer visible, have your dealer replace the rim.

Technical Specifications

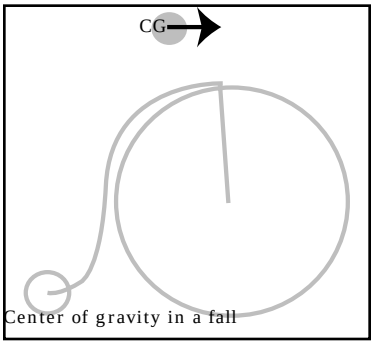
For detailed technical specifications, wheel building instructions, spoke lengths, tensions, and hub maintenance information, please refer to the Bontrager Wheel Building Manual, Bontrager Service Manual, or cybersurf to www.bontrager.com.

The wheels of the bicycle have changed size throughout its development

Why are bicycle wheels the size they are? The first machine considered a true bicycle was called a Draisienne, after the Frenchman credited with inventing it. This embryonic bicycle allowed the rider to sit between two wheels, glide and steer. The propulsion was provided by pushing along the ground with one's feet. As such, the wheels were not overly large, and the rider sat near the ground. It set speed records, and was a highly efficient form of locomotion at the time.

For the purposes of this discussion, the next step in bicycle development was increasing its speed by attaching pedal cranks. The easiest method for attaching pedals was to put them directly on the front wheel axle, like modern tricycles. This put the pedals in front of the rider, for both comfort and ease of use. While pedaling increased the speed of the bike, it quickly became apparent that a larger drive wheel would make for further increases. As the front wheel grew, the rear wheel became smaller to reduce weight and maintain the handling characteristics of a shorter wheelbase. To maintain control over the bike, the rider had to sit near the steering axis, necessarily above the wheel. This new design was known as the penny-farthing, or Ordinary.

As the size of the drive wheel grew, bicycle speeds increased. Wheels got bigger and bigger. The riders on these bigger wheels got higher and higher off the ground. Crashes became common. Remember, paved roads were rare. Special handlebar designs were developed to make it easier to dismount as the rider flew over the front wheel.



Center of gravity in a fall

Even with the many crashes, wheel size increased. The limit on wheel size was the rider's leg length. If the wheel was too big, the rider simply could not reach the pedals. Still, rider's wanted more speed. Several solutions were put forth, and the one that succeeded was a chain-driven rear wheel. With the introduction of chain drive, bicycles acquired gears and gear ratios. By using cogs attached to the cranks and rear wheel, with different numbers of teeth, a single turn of the cranks could mean multiple turns of the rear wheel. This allowed a bicycle with smaller wheels to travel greater distances with a single revolution of the cranks. It also put the rider as close to the ground as pedal clearance would allow, and with two wheels of the same size. With the lowered center of gravity or these bikes, their riders weren't nearly as prone to pitching over the front wheel, and thus the new bikes became known as "Safety" bikes.

The wheels used on early Safety bikes were made of iron, steel or wood, which were then covered with a variety of materials. None of these cover materials was particularly shock absorptive, nor much help in achieving traction. However, they allowed a bike design to utilize whatever wheel size its creator desired. Wheel size varied a great deal, with much experimentation. Some bikes had similar wheel diameters, others had different front and rear wheel diameters. There wasn't even agreement on which end of the bike got the bigger wheel.

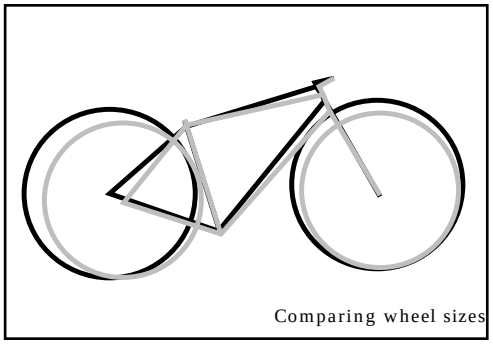
One of the next significant development in bicycle technology was pneumatic tires. This truly was a revolution, allowing bikes to float over small bumps, maintain traction, and all with a great deal more comfort. Soon after their introduction, pneumatic tires became a requirement for any performance bicycle. Tires, then, are what finally settled the debate of wheel size. Wheels were thereafter made in the available tire sizes.

A brief review of the literature did not reveal any specific reason why specific sizes were selected. Instead, its probably a function of tires being made to fit an existing wheel. And that wheel size was determined to fit within the existing bicycle design parameters as they occurred at the time.

Later, a similar choice was made at the birth of the modern mountain bike. When pioneers like Gary Fisher were building their clunkers for the famous descent of Mt. Tam, the available tire size in a balloon tire was 26". Out of convenience, this became their standard. And as mountain bike tires evolved, they were made to fit these same rims. So the evolution of the mountain bike tire size was like that of wheel sizes; a selection made by what was available at the moment.

The limits to wheel size

The modern bicycle configuration places the rider's hands almost directly above the axle of the front wheel. Between these two points there resides the headset, or steering bearings, and the frame's head tube which holds those bearings. Attached above this is the stem. Below the steering bearings, the fork crown requires space, as does tire clearance for suspension fork travel. As wheel size increases, the room for the components decreases. If the wheel is too big, the immediate result is a handlebar that cannot be lowered to the desired position.


Comparing wheel sizes

An overly large front wheel can also create problems with the front-center dimension, the distance from the bottom bracket to the front axle. Front-center effects steering quickness, handling, and stability. The tire contact patch is directly under the front axle, regardless of the wheel size. A longer front-center adds stability, but slows the steering response of the bike somewhat. A short front center does the opposite, and if paired with a large wheel may allow toe-clip overlap, where the rider's foot contacts the front wheel during a sharp, slow speed turn.

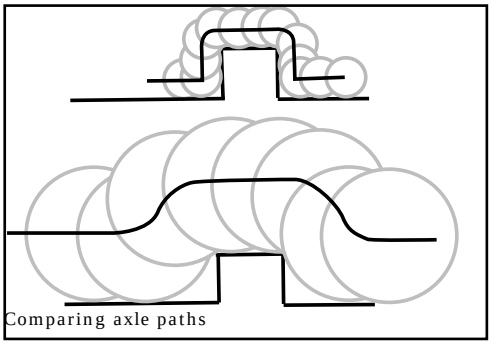
The diameter of the rear wheel dictates the chainstay length, important because chainstay length is a factor in bottom bracket rigidity. Also, the location of the rear tire contact patch, relative to the rider's

center of gravity, effects traction on steep terrain.

As a result of 'crowding', larger wheels only work on larger bikes. On a smaller bike, the head tube would have to be shortened so much that the frame would lose torsional rigidity. Even worse, the rider's hands would be lifted such that they could not achieve the proper position. The good news is that smaller people already had a low center of gravity to begin with; its just those bicycling skyscrapers who were too far above their front axles.

Large wheels provide suspension for the rider through a smoother axle path

Imagine a skateboard wheel running over a series of 1" bumps. Since the skateboard wheel has a radius of only an inch, each time the wheel contacts a bump it has to move vertically 1 inch in just 1 inch of horizontal motion. This is an abrupt change with drastic effects on the rider's motion. With a 20" BMX wheel, that same 1 inch of vertical motion happens over about 4 inches of forward motion. This turns what was a radical bump into a mild annoyance. Now ride over our bump on a 26" wheel, and you have almost 6" of horizontal distance to spread out the impact, and the bump is hardly noticeable. Not only does the bump disturb your riding less, but it also has less effect on your speed.


Comparing axle paths

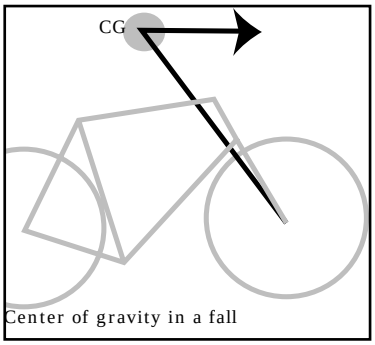
This effect is somewhat similar to that of a suspension fork, except that it happens on all bumps, regardless of suspension fork tuning. Tire pressure changes the effect somewhat, but with the same results regardless of tire size.

Since riding off road is normally on less than smooth surfaces, the effect of a larger wheel is constantly enhancing the ride. If both wheels are larger, the effect works on both ends of the bike.

On the Fisher 29ers you'll notice this effect in two ways; The bike will ride smoother and more comfortably. And the bike will be slightly faster, especially on broken or rough ground.

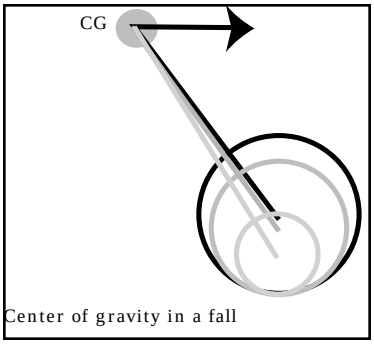
Larger wheels provide resistance to pitching over the bars (stability)

This last statement depends somewhat on the bike design. As an example, the high wheeler had a well-deserved reputation for being easy to pitch forward. The reason for this lies in the location of the rider's center of gravity relative to the pivot point when they pitch forward. Pitching over the bars is not limited to downhills, but can occur any time the forces holding the rider behind the axle are less than the forces pushing them forward. So a sudden deceleration on the flats can make a rider pitch, much like flipping over the bars on a steep descent. Unless the front brake is locked up, the pivot point for the flip is the front axle.



Center of gravity in a fall

In the case of the highwheeler, the rider sat well forward and quite high. Their center of mass was only just barely behind the front axle. With this position, it took little force to push them forward over the axle.



Center of gravity in a fall

However, for this discussion we're talking about two modern mountain bikes that have only a slight change; a different wheel diameter. The bottom bracket is the same height from the ground on a 29er as on a bike with 26" wheels, so the rider's center of mass hasn't changed location. The only real difference is the larger front wheel has a higher pivot. It takes more force to push the rider forward over this higher pivot. The larger front wheel makes it easier to descend, plus makes the bike more stable as it runs over small obstacles that cause a deceleration of the bike.

On the Fisher 29ers you'll notice this effect mostly on steeper downhills. You won't have to slide back in the saddle as much to feel stable. This also means you can stay in the 'power position' for effective pedaling, so it even helps on the uphills!

Longer forks (from bigger wheels) make a bike more stable

Trail is the distance from the tire contact patch to the center of the steering axis where it meets the ground. If the head angle and fork offset remain constant, a larger wheel diameter increases trail.

Trail is what allows a bike to run in what we perceive as a 'straight' line. Its actually not straight at all, but instead a constant series of wiggles. These wiggles occur as the bike tries to maintain a state of equilibrium. Here's how it works. As a bike is tipped to the side, the front tire contact is moved to the side. You can try this; simply lean your bike to the side and watch what happens. The front wheel turns in the direction of the lean. With forward propulsion, the bike turns toward the lean and lifts the bike back into an upright state of equilibrium (not really balanced, but trying to balance).

The reason the bike steers into a lean is trail. As a bike is leaned, the contact patch is no longer in line with the steering axis, but to the side. This puts a torque about the steering axis, which turns the handlebars. The more trail there is, the further the contact patch is from the steering axis, and the stronger the steering effect as the bike is leaned. Consequently, the more trail there is, the more forceful the centering of the bike when its leaned, so the more stable it is.

On the Fisher 29ers you'll notice this effect mostly as a 'steady' feel as you head down the trail. The handlebars seem quiet, and as a result your hands and

forearms can relax. Want to make the bike turn quickly? Just lean it over, engage some of the front tire's massive side knobs, and rail it through the turn!

Larger diameter means lower rolling resistance

Studies quoted in Bicycling Science state that for every 35% increase in wheel diameter, there is a 20% decrease in rolling resistance on a soft surface. A similar increase in tire width only decreases rolling resistance by 10%.

What's the final on this?

Like with any bicycle design, there are compromises. Larger wheels are not as stiff as smaller wheels. To maintain similar strength to their smaller counterparts, they are also somewhat heavier. Weight and rigidity are two ways to effect the overall efficiency of a bicycle. But they aren't the only two ways. Suspension, in the form of heavy, flexible suspension forks, has proven itself to be a compromise worth making. For many bigger riders, the smoother ride and increased stability of 29ers will also enhance their riding.

Throughout our development of this new wheel standard, we have made every effort to base our decisions on the best science. Gary himself did a long-running test where he compared his heart rate and times over the same course riding a 29er and his favorite 26" wheeled bike. He did this repeatedly, in a variety of conditions. Gary's best estimate is that the 29er was 3% faster for him. Whether you're comparing finish times, or you ride a little further on your Saturday ride, or you're less whipped after your next back country epic, we think 3% is a substantial difference

Creating an identical fit between a 29er and a stock 2002 26" Fisher Genesis bike

Although there are some differences between the fit between a stock 29er and a 2002 Paragon, they are mostly due to our desire to provide the most possible adjustment. In other words, we use the same number of stem spacers on all these bikes.

The following chart shows how to match the sizes. It shows the frame model and size, the stem and spacer configuration (stock on the 26", modified for the 29er) and the exact relationship to the bottom bracket in millimeters in both vertical and horizontal measurements.

Your results may vary, especially since suspension fork adjustment effects bike fit. These are calculated using 80mm travel forks with 10mm sag. Also note that the stems used on these two models do not match in rise, which effects the final fit.

The three asterisks (*) denote the non-specified adjustments.

Model	Size	Stem	Spacers	Vertical	Horizontal
Paragon	S	75/5	25	653	522
Supercaliber	S	60/7*	0*	650	524
Paragon	M	90/5	25	674	549
Supercaliber	M	90/7	10*	674	553
Paragon	L	105/10	25	708	564
Supercaliber	L	105/7	25	706	568
Paragon	XL	105/10	25	722	564
Supercaliber	XL	105/7	25	715	569

Note: 5mm is about 1/8", and is not likely to be felt by even the most sensitive rider.

Gary Fisher: A History

A BRIEF HISTORY OF OFF-ROAD RIDING (IN THE MODERN ERA)

1963

Gary Fisher was an active cyclist at a youthful age. At age 12, Gary started competing on both the road and track. The following year, he discovered cyclocross racing. He also finished 2nd in the Intermediate age group at the Northern California Road Championships.

1968

Several years later Gary was suspended from bike racing because his hair was too long. As an alternate outlet for his energy, he built a light show, and played major rock venues around San Francisco.

1972

The "long hair" rule was overturned, and Gary commenced road racing.

1973

Gary's finishes were good enough for him to become a Category 1 USCF road racer.

1974

It was for this busy time that Gary Fisher would become known as "The Father of Mountain Biking". He earned the title through a series of events.

Gary, his friends and their fat-tired bikes were attempting to ride in the hills near his house in Marin County, California. Due to the heavy-duty nature of their bikes (about 42 pounds of duty), they spent 20% of their time in the hills riding, and 80% pushing. Gary wanted to reverse the ratio. He put some wide range gearing and Tandem drum brakes, along with motorcycle levers, longer cranks, and a seatpost quick release, on an old 1930's newsboy bike fondly known as "The Clunker". Its wide gear range and heavy duty braking make it the first true off-road bike; ridable up mountains as well as down. A new sport was born.

1975

Gary was busy helping his roommate, Charlie Kelly, stage the Repack off-road downhill race series. To get even more involved in cycling, Gary began writing a monthly road test article for Bicycling Magazine.

1976

Gary's early road racing results were followed by bigger successes. Gary won the Tour of Klamath Lake, a 125 mile Olympic development race. He also placed 12th in the national road championships.

1977

Gary kept road racing. Gary finished fifth in the National Cyclocross championships and finished the Red Zinger stage race in Colorado.

Offroad, Gary set the Repack record of 4:22:14, a record that still stands.

1979

Gary started his own bike business. He did a "bad job" at trademarking the name "MountainBikes". His brand name rapidly became the generic term for the sport. That first year he made just 165 bikes, but at the time those few bikes comprised 85% of the market share.

1980

Gary's business pushed out 1000 bikes. That's a pretty steep growth curve.

Gary coins the term "Bullmoose handlebar" which he did trademark. Gary is the first to use a Shimano freehub and "Bear Trap" pedals on a mountain bike.

Also in 1980 he won every cross-country mountain bike race held in California, including the Reseda to the Sea off-road race.

Gary and Charlie Kelly edit the bicycle section of the "Last Whole Earth Catalog".

1981

Gary wins the second Reseda to the Sea off-road race. Gary wins the first Rockhopper Off-Road Race and sets the stage for Fisher riders to claim the next six. Gary wins the Paradise Divide Criterium in Crested Butte, Colorado.

Fisher sponsors a women's team in the Coors Classic stage race.

1983

The National Off Road Biking Association better known as NORBA was born in the living room of Charlie Kelly at Jack Ingram's insistence. Gary was one of the founding members.

1984

Gary develops and names the Unicrown fork. Fisher has the first production bike with a brake under the chainstay. Gary introduces short chainstays and steeper seat angles to mountain bikes. Gary designs and builds the first mountain bike using Tange Prestige tubing. The Fisher Excalibur is the first production mountain bike with a Dura Ace freehub, toe clips and straps.

The first US National Championship for mountain bikes was held. Fisher fields a team for the Nationals, including Dale Stetina, Eric Heiden, Joe Murray, Tom Ritchey and John Loomis. Loomis is the top Fisher finisher in third place.

Fisher racer Dale Stetina wins the Paradise Divide Stage Race. Team Fisher riders win 70% of all off-road races held.

Gary goes to France to introduce the mountain bike, racing downhill in the La Plagne Alps.

1985

Fisher Team riders work with Shimano to develop indexed shifting. Gary develops "Standover height" and "Effective top tube length" measurements to better describe off-road frame fit.

1986

Fisher starts a grass roots racing team - the largest off-road racing team in the world. Gary sells the name "Marin Mountain Bikes" to Bob Buckley.

1987

Fisher bikes win a World Championship under team member Sara Ballantyne. The Fisher Procaliber is voted one of the "Top Ten All-Time Best Mountain Bikes" by Mountain Bike Action Magazine. Gary is

named by Outside Magazine as one of "50 Who Left Their Mark" in the last ten years.

1988

The innovative Fisher CR-7 is introduced combining Gary's renowned frame design and Richard Cunningham's expertise at joining aluminum and chrome-moly. Bicycle Guide Magazine names the titanium Fisher Prometheus the "Best of 88". Gary is inducted at the inaugural Mountain Bike Hall of Fame in Crested Butte.

1989

Gary introduces the Evolution headset, tubing and seatpost, the first oversize component system for off-road bikes. Bicycle Guide magazine names the Fisher Gemini Tandem “Best of 89”. Fisher produces its first hybrid bicycle.

Fisher rider Sara Ballantyne wins her third world championship.

1990

Gary's collaboration with Mert Lawwill on the RS-1 full suspension bike wins Bicycling Magazine's “Hot Bike” award. The Fisher Mt. Tam is the first production mountain bike with a front suspension fork (RockShox) and suspension ready geometry.

1991

Gary introduces 15.5" chainstays on the Montare.

Fisher starts it's international mountain bike team, including world champions Albert Iten and Walter Braendli of Switzerland and Paola Pezzo and Paolo Rusola of Italy.

1992

Gary develops the Alembic carbon fiber suspension bike with Toray of Japan.

1993

Trek Bicycle Corporation acquires the Gary Fisher Bicycle Company. The new Gary Fisher brand is launched in September with its most competitive range ever, including 10 models manufactured in the United States. Fisher rider Paola Pezzo of Italy wins the UCI World Mountain Bike Championship in France.

1994

Gary is named the “Founding Father of Mountain Bikes” by Smithsonian magazine. Gary receives a lifetime achievement award at the Korbel Night of Champions, cycling's Academy Awards.

1996

Fisher rider Paola Pezzo wins the gold medal for mountain bikes at the Atlanta Olympic Games. Gary designs the Joshua dual suspension bike, the Joshua later becomes the most copied design of the 90’s. Gary develops “Genesis Geometry” the first significant geometry change in mountain biking since 1987. The Fisher brand is the fastest growing bicycle brand in the U.S.A.

1997

Fisher starts a BMX team and introduces 10 BMX models including a Joshua-inspired aluminum Pro Issue team frame. Paola Pezzo dominates the Women’s XC field on her Genesis geometry bicycle by winning seven of nine Grundig World Cup races, including the overall championship and the World Championship title. Gary himself has an incredible year in the racing scene, winning the Masters Cross Country category at the U.S. National Championships and earning a spot on the U.S. Masters team.

1998

Fisher shows the bike world that dramatic improvements to mountain bike frames are still possible by unveiling Genesis geometry and makes it available to consumers around the globe. Gary wins the Trans Alp 8 day off road stage race in Europe.

1999

Fisher rider Michael Rasmussen wins the men’s Cross Country event at the World Championships.

2000

Fisher introduces the Sugar, the full-suspension platform that’s light enough to be raced professionally. “Popular Mechanics” names Gary one of the century’s top sports innovators. American rider Walker Fergerson, riding a Fisher, wins the Junior world championships. Fisher has the worlds top women’s mountain bike team on the cross country circuit, crowned by Paola Pezzo's second Olympic gold win at the Sydney games.

2001

Fisher introduces Genesisters geometry on both hardtails and full suspension bikes to the applause of performance-oriented female mountain bikers worldwide.

Fisher riders have another excellent year on the mountain bike circuit with both female and male podium visits.

2002

Who knows what Gary will come up with next? As usual, he’s spending a lot of time riding, racing, and just hanging out with riders around the world. Chances are, whatever it is, it will be very, very cool.

Gary met his wife Belle over 20 years ago, when she came to his house with her boyfriend to buy a part for a bike. They have two kids, Rachel (17) and Nick (15). When he's not on his bike or traveling the world to promote the sport, Gary's into collecting art; paintings, sculpture, modern and folk art.

The Greg LeMond Story

Greg LeMond is a visionary. In 1978 as a young high school student, Greg listed on a piece of paper his 4 goals in cycling, with dates:

Greg's List

1. 1979- Win Junior World Championship Road Race

2. 1980- Win Olympic Road Race

3. By age 22- Win Professional World Championship Road Race

4. By age 25- Win Tour de France

Greg changes American cycling

At the time, a prediction like this seemed brash. In 1978, the idea that an American could win an international race was almost laughable.

Today, an exceptional set of goals like Greg's has become completely believable. This complete change in our perception illustrates just how much Greg changed cycling in the U.S., if not the world.

As a high school student, a kid really, Greg could already see what it would take to reach his goals. He envisioned the experience that would teach him the moves and he could see the training which would give him the strength.

As a developing athlete, Greg identified the equipment which would give him an edge. He had an uncanny knack for equipment selection, always the first to spot a particular item which might give him an advantage. Some advantages were big, some were small. But in any race, seconds count. Consider that in 1989, Greg won the Tour de France by the closest margin in Tour history , just 9 seconds. Over the approximately 2000 miles of the Tour, how many small advantages does it take to make up 9 seconds?

Most of the items that Greg pioneered are considered standard equipment these days. Almost every bike racer depends on them to be competitive, without second thought to following Greg's lead. To name but a few, Greg was among the first to use clipless pedals, a heart monitor, special cycling eye wear, a cycle computer, thin-shell helmet, or race a titanium frame in the European peloton. Of course, our favorite competitive edge is a bike built with LeMond geometry, which we detail later. For now, back to Greg's career.

Checking off the list

Greg began checking off his goals in 1979 by winning the Junior World Championship Road Race in Buenos Aires, Argentina. For extra measure, he also won a silver in the Pursuit and a bronze in the Team Time Trial.

Winning three World Championship medals is a story in itself, but the road race stands out. As the finish neared, the pack was together. It looked like a big field sprint. With 10km to go, Greg attacked. Only one rider went with him, but this young Belgian opportunist refused to work. Greg put his head down and gave it his all. 4 Russians went to the chase, riding in TTT formation. With 2km to go these four riders had completely strung out the field, yet Greg was single-handedly holding them off. Surely the Belgian, fresh from sitting on Greg's wheel, had the Gold already?

As the finish neared, the Belgian jumped off Greg's wheel. Somehow, even after pulling the Belgian for almost 10km, Greg found the power to sprint. Greg was starting to come back around the Belgian! In a panic, the Belgian threw a vicious hook. Although he was forced into a pile of old tires used as a race barricade, Greg still stayed up. The hook was so obvious that the Belgian was relegated. LeMond had won!

Greg's first year as a Senior

The next year, 1980, was Greg's first as a senior competitor. He had a phenomenal spring season competing in Europe, including winning the Circuit de la Sarthe. The French press was in an uproar. It was the first time an American had won a major French stage race. With almost no team support, Greg had managed a significant win against the major European national teams, and even some Pros. Everything pointed to achieving goal #2, a Gold in the 1980 Olympic Road Race.

Unfortunately, the U.S. chose to boycott the Moscow Olympics. Missing the Olympics was a let down for Greg. Although Greg had dreamed of Olympic glory, he had not been able to envision politics entering the sporting arena.

Greg was at a cross roads; wait four years for another Olympics, or turn Pro? Unlike today, Professional racers in 1980 were not allowed to compete in the Olympics. Greg's spring season had attracted an offer from Cyril Guimard, the Directeur Sportif of the Renault professional squad. An eager and determined Greg LeMond accepted.

Greg gave up his amateur status and quickly learned Pro racing under the tutelage of his new team mate, Bernard Hinault. Just three short years later, Greg won the 1983 World Championship Road Race in Zurich, Switzerland. On a tough, rainy circuit LeMond broke away with 20km to go. Again, only one rider went with him. However, this time Greg was able to get his breakaway companion to do some work. Greg used tactics in perfect fashion, using the rider to maintain his lead. Then when the time came Greg dropped him like a stone, riding in alone to beat the best road racers in the world. Goal #3 had been met, and Greg was just 22.

The Tour de France

The final goal, the Tour de France, was within his reach at just 24 years of age. But it was not to be. Here's the story. Greg was supporting Hinault as the team leader. Even working as a 'domestique', Greg had managed to place himself second in G.C. (General Classification). During the finish of one stage late in the race, Hinault had suffered a horrible crash. Suffering badly with a swollen face on the next day, in the mountains Hinault was dropped in an attack that Greg covered defensively. Sitting on the wheel of the attacker, Greg had opened a gap over Hinault sufficient to make Greg 'leader on the road'. Greg was feeling great and wanted to attack. He had the yellow jersey in his grasp. But the team's manager would not let Greg attack.

The next year Greg won the '85 Tour, meeting the goal set back in high school. This victory was an emotional event, with more trouble from Hinault, his own team mate, than the rest of the field.

A small setback for Greg

During the winter of 1986, Greg was shot in a hunting accident that nearly took his young life. Despite carrying 40 shotgun pellets in his chest, after a lengthy recovery he went on to race again .

The comeback

Surely one of the greatest moments in the sport was the final time trial of the 1989 Tour de France. Facing what was considered an insurmountable lead by French racer Fignon, Greg rode the fastest time trial in Tour history. In doing so, he beat Fignon and won the Tour by just 8 seconds. His victory was the closest time margin of any Tour on record.

In following seasons, Greg's performance eroded. Later it was determined that Greg had a rare cell disorder that could possibly be attributed to the lead in his body. If Greg hadn't had the hunting accident, who knows how many Tours he could have won?

Greg LeMond bicycles- The next page in Greg's history

Obviously, Greg was quite a bike racer. He had incredible talent, and an even more tremendous will to win. He also had a third advantage over his competitors. Greg knew how to use technology to his advantage.

As an example, when Greg beat Fignon in the final time trial of the '89 tour, Greg used his knowledge of equipment to his full advantage. While Fignon flew his ponytail in a show of French style, Greg strapped on a funny looking aero helmet and bolted on an odd-shaped aero handlebar. Most of the sport laughed at these so-called 'gimmicks'. Their laughter turned to awe as LeMond did the impossible, removing Fignon's 'insurmountable' 40 second lead.

Greg's Position

Along with learning about training from the best coaches and sports doctors in the world, Greg also studied the relationships of a rider's bicycle position. It should be obvious from his results that something was working for him.

To compliment what he learned about maximizing a cyclist's potential, he designed his own LeMond frame geometries (see page 11). At that time in the U.S., racing bicycle design focused on stiff, short wheel base models with ultra-quick steering.

Greg learned a lot about bikes when he was racing in Europe. He found that comfort and stability allow a bike rider to be fast. To execute a high speed turn in the Alps, a bike needs to have solid and predictable steering. Its not how quick a bike turns, but the rider's ability to control a line at speed. To provide the rider with leverage to powerfully push a big gear in the Alps, the seat must be rearward, requiring the seat tube to be laid back. Its not how stiff the bike is that gets a rider up a hill efficiently, but placing the rider so that they can economically exert the most pedaling force. And finally, to prevent fatigue on long stages a bike must be comfortable. Its not how soft the saddle is, but allowing the bike to absorb road shock while distributing the rider's weight correctly.

LeMond's experience helps every cyclist

You may be a recreational rider, or a national caliber competitor on the Saturn race team. You may race for a living, or ride for simple pleasure. Either way, your riding success has Greg's inspiration behind it.

Sugar

New for 2002

The Sugar frame gets a sharper, race-oriented focus and resulting major revamp. The elements of this change are a stiffer, more responsive frame and lower weight.

Now incorparating ZR9000 aluminum with carbon fiber stays, the frame lost another 1/2 pound (~220 grams)! Considering that last year's Sugar was arguably the lightest full suspension frame on the market, that's quite an accomplishment (although we've had challengers to the previous claim, none of those have passed our baseline testing).

Three things allowed the Sugar's weight-loss accomplishment. First, ZR9000 is stronger, so we need less of it to result in the same frame strength. Second, we redesigned the swingarm. Third, we use more carbon fiber, adn its lighter than aluminum.

At the same time we were reducing the weight, we managed to increase the frame stiffness. This has three sources (this three reason thing is sort of a theme, eh?). We increased the diameter of the downtube to 2 inches (54mm). We greatly beefed up the 'seatstays'. And the new B*Link is also torsionally much more rigid.

While there are other, more subtle details we could discuss, we'll just point out that we added rear tire clearance. The new 2002 Sugar will even accept some 2.35" tires.

Geometry

The Sugar uses Fisher's race-proven Genesis Geometry. This design provides nimble handling, high speed stability, and allows you to stay centered over the bike so in rough terrain instead of sliding off the back of the saddle, you can apply pedal power.

Ride

The Sugar's frame offers outstanding pedaling efficiency. This exceptional frame rigidity also gives the Sugar its 'riding on rails' cornering ability.

The Sugar design feels like a hardtail much of the time, but without the jarring of rigid stays. It climbs well out of the saddle, it smoothens small bumps for comfort, and has incredible traction. The traction advantages are full-time, both climbing and braking hard. The combination of great feel and low weight-makes the Sugar ideal for racing in technical terrain, or just having fun on a short ride after work. Its a great all-round riding bike. And since the weight penalty is less than a full water bottle, it makes riding a hard tail seem almost pointless for a lot of people.

Frame details

The Sugar uses Platinum series ZR9000 aluminum frame technology. A very oversize, butted and shaped down tube creates a rigid structure between the bottom bracket and head tube, for frame stiffness and strength. Speaking of frame strength, we even added a big butterfly gusset under the head tube.

The head tube is butted, with a thin mid-section for low weight, but heavy duty walls to support the headset cups.

Full top tube cable routing keeps the cables out of the muck for friction free shifting and braking.

The B*Link design of the Sugar adds rear end torsional and lateral rigidity. By keeping the connection between the frame and swingarm stiff, handling is better. So is pivot durability. Loose pivots allow a frame to flex, as well as squeak and wear.

	Frame sizes	S	M	L	XL
MILLIMETERS	Head angle	71.0	71.5	71.5	71.5
	Seat angle	73.5	73.5	73.5	73.5
	Standover	691	703	714	724
	Seat tube	396	446	484	535
	Head tube	90	105	125	145
	Eff top tube	582	608	628	647
	Chainstays	415	415	415	415
	BB height	303	303	303	303
	Offset	41.9	41.9	41.9	41.9
	Trail	71	68	68	68
	Wheelbase	1055	1077	1098	1117
INCHES	Standover	27.2	27.7	28.1	28.5
	Seat tube	15.6	17.6	19.1	21.1
	Head tube	3.5	4.1	4.9	5.7
	Eff top tube	22.9	23.9	24.7	25.5
	Chainstays	16.3	16.3	16.3	16.3
	BB height	11.9	11.9	11.9	11.9
	Offset	1.6	1.6	1.6	1.6
	Trail	2.8	2.7	2.7	2.7
	Wheelbase	41.5	42.4	43.2	44.0

The fittings, like dropouts and shock mounts, on the Sugar are almost all forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

The Sugar uses a special dropout to accommodate a disc brake adapter. This adapter provides mounting for an International style rear disc brake.

All Sugar bikes have 2 water bottle mounts.

Special parts

Disc brake adapter ..
B*Link .....
Pivot hardware .....
Derailleur hanger ....

Sugar 1

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Carbon composite	
	Frame weight	*4.1 lb (1.86 kg)*
FORK	Manitou Mars Super	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
REAR SHOCK	Cane Creek Cloud Nine	
	Stroke	*1.5*
	Length	*6.5*
	Width	*1/2 and 7/8"*
	Eyes	*6 and 15.08mm*
HEADSET	Cane Creek S-6 Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.1*

CONTROLS

HANDLEBAR	Bontrager Race Lite	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race Lite	
	Steerer clamp height, mm	*39.5*
SHIFT LEVERS	Shimano XTR RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano XTR	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Shimano XTR 46/34/24	
	Bolt hole circle, mm	*Splined/112/68*
BB	Shimano XTR, cartridge	
	Shell x axle, mm	*73 x 112.5, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Deore XT 11-34, 9spd	

WHEELSET

FRONT WHEEL	Btrg Race Lite ATB, tubeless compatible, 24°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
FRONT TIRE	IRC Serac XC, tubeless	
	Tire size	*26 x 2.1*
REAR WHEEL	Btrg Race Lite ATB, tubeless compatible, 28°	
	E.R.D., mm	*542*
	Rim strip	*Tubeless*
REAR TIRE	IRC Serac XC, tubeless	
	Tire size	*26 x 2.1*
SPOKES	DT Revolution 14/17G, alloy nipples	
	Front, mm	*250, Radial*
	Rear, mm	*267/263, 3x*
INNER TUBES	Presta valve (for display)	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	SSM Era, Ti/leather	
BRAKES	Avid Single Digit Ti, linear pull	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger	

The reasons this Fisher rocks:

Rider: Racer

Frameset

B*Link suspension- hardtail feel, 2.8” travel

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Race Lite wheels -super light for acceleration

Tubeless compatible- fits both tubeless and regular tires

Components

Professional level- XTR

Manitou Mars Super suspension fork- lightweight ari fork with a torsionally rigid design

Cane Creek Cloud 9 rear shock- light, tunable, and with a button for motion control

Bontrager bar/stem, post- super strong

GEARING

	24	36	46
11	57	86	110
13	48	73	93
15	42	63	80
17	37	56	71
20	31	47	60
23	27	41	52
26	24	36	46
30	21	31	40
34	19	28	35

BIKE WEIGHT

23.6 lb.
10.71 kg.

COLORS

Blue Metallic/Tinted Blue Clear • Yellow/Red decal • Deep Candy Red fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	69	72	74
	Cm	167	176	184	189
Handlebar	Width, mm	600	600	600	600
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	172.6	187.6	207.6	227.6

Sugar 2

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Carbon composite	
	Frame weight	*4.1 lb (1.86 kg)*
FORK	Manitou Mars Elite	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
REAR SHOCK	Cane Creek AD-12	
	Stroke	*1.5*
	Length	*6.5*
	Width	*1/2 and 7/8"*
	Eyes	*6 and 15.08mm*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Race, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race	
	Steerer clamp height, mm	*44.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore XT	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Bontrager Race 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined	
	Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race ATB, tubeless compatible, 24°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
FRONT TIRE	IRC Serac XC, folding	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Race ATB, tubeless compatible, 28°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
REAR TIRE	IRC Serac XC, folding	
	Tire size	*26 x 2.1*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*251, Radial*
	Rear, mm	*265/267, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Time ATAC, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger	

The reasons this Fisher rocks:

Rider: Racer

Frameset

B*Link suspension- hardtail feel, 2.8” travel

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Race Lite wheels -super light for acceleration

Tubeless compatible- fits both tubeless and regular tires

Components

Professional level- XTR

Manitou Mars Super suspension fork- lightweight ari fork with a torsionally rigid design

Cane Creek Cloud 9 rear shock- light, tunable, and with a button for motion control

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

25.4 lb.
11.53 kg.

COLORS

Gold/Tinted Silver Clear • Black/Silver decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	71	74	76
	Cm	172	180	188	193
Handlebar	Width, mm	630	630	630	630
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	182.5	197.5	217.5	237.5

New for 2002

The Sugar+ frame is an evolution of the 2001 Sugar, with an emphasis on the adventure rider. It also incorporates many of the feaures of the new 2002 Sugar frame technology.

Like the 2002 sugar, the Sugar+ incorporates ZR9000 aluminum for reduced weight and increased strength. ZR9000 is stronger, so we need less of it to result in the same frame strength. The Sugar+ has a redesigned the swingarm. To make it a great adventure bike, the new 2002 Sugar+ will even accept some 2.35" tires.

At the same time we were reducing the weight, we managed to increase the frame stiffness. We increased the diameter of the downtube to 2 inches (54mm). We greatly beefed up the 'seatstays'. And the new Sybil link is also torsionally much more rigid.

The key to the versatility of the Sugar+ is the Sybil link. This unique design allows you to change the performance of this bike from a tight and taught racing feel to the ground-hugging cush of a long travel adventure bike. By simply moving the bolt on the Sybil link and adjusting the fork travel, you completely change the feel of the bike. And an important note if you're looking at some other brand of adjustable suspension- when you change the Sugar+ there is no need to re-inflate the rear shock. and another point- when you readjust the sugar+, the sweet Genesis steering geometry remains the same (unless you decide to go really long with the fork adjustment- some of the forks we spec'd adjust out to 125mm of travel!).

Geometry

The Sugar uses Fisher's race-proven Genesis Geometry. This design provides nimble handling, high speed stability, and allows you to stay centered over the bike so in rough terrain instead of sliding off the back of the saddle, you can apply pedal power.

Ride

The Sugar's frame offers outstanding pedaling efficiency. This exceptional frame rigidity also gives the Sugar its 'riding on rails' cornering ability.

The Sugar (and Sugar+ design when in its short travel, 80mm mode) feels like a hardtail. It climbs well out of the saddle, it smoothens small bumps for comfort, and has incredible traction.

When it its long travel, 4.1" (105mm) mode, the Sugar+ feels cushy and ultra-smooth. However, unlike bouncy bikes of the past the Sugar+ traction advantages are full-time, both climbing and braking hard. The combination of great feel and low weightmakes the Sugar+ ideal in technical terrain, or just having fun on a short ride after work. Its our most versatile, all-round riding bike.

Frame details

The Sugar+ uses Platinum series ZR9000 aluminum frame technology. A very oversize, butted and shaped down tube creates a rigid structure between the bottom bracket and head tube, for frame stiffness and strength. Speaking of frame strength, we even added a big butterfly gusset under the head tube.

The head tube is butted, with a thin mid-section for low weight, but heavy duty walls to support the headset cups.

Sugar+

		S	M	L	XL
	Frame sizes				
	Head angle	71.0	71.5	71.5	71.5
	Seat angle	73.5	73.5	73.5	73.5
MILLIMETERS	Standover	691	703	714	724
	Seat tube	396	446	484	535
	Head tube	90	105	125	145
	Eff top tube	582	608	628	647
	Chainstays	415	415	415	415
	BB height	303	303	303	303
	Offset	41.9	41.9	41.9	41.9
	Trail	71	68	68	68
	Wheelbase	1055	1077	1098	1117
INCHES	Standover	27.2	27.7	28.1	28.5
	Seat tube	15.6	17.6	19.1	21.1
	Head tube	3.5	4.1	4.9	5.7
	Eff top tube	22.9	23.9	24.7	25.5
	Chainstays	16.3	16.3	16.3	16.3
	BB height	11.9	11.9	11.9	11.9
	Offset	1.6	1.6	1.6	1.6
	Trail	2.8	2.7	2.7	2.7
	Wheelbase	41.5	42.4	43.2	44.0

Full top tube cable routing keeps the cables out of the muck for friction free shifting and braking.

The B*Link design of the Sugar adds rear end torsional and lateral rigidity. By keeping the connection between the frame and swingarm stiff, handling is better. So is pivot durability. Loose pivots allow a frame to flex, as well as squeak and wear.

The fittings, like dropouts and shock mounts, on the Sugar are almost all forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

The Sugar uses a special dropout to accommodate a disc brake adapter. This adapter provides mounting for an International style rear disc brake.

All Sugar bikes have 2 water bottle mounts.

Special parts

Disc brake adapter ..
B*Link .....
Pivot hardware .....
Derailleur hanger ....

Sugar+ GS

		S	M
	Frame sizes		
	Head angle	71.0	71.5
	Seat angle	73.5	73.5
MILLIMETERS	Standover	713	724
	Seat tube	405	432
	Head tube	90	105
	Eff top tube	566	594
	Chainstays	420	420
	BB height	312	312
	Offset	38.0	38.0
	Trail	74	71
	Wheelbase	1045	1069
INCHES	Standover	28.1	28.5
	Seat tube	15.9	17.0
	Head tube	3.5	4.1
	Eff top tube	22.3	23.4
	Chainstays	16.5	16.5
	BB height	12.3	12.3
	Offset	1.5	1.5
	Trail	2.9	2.8
	Wheelbase	41.2	42.1

Sugar 2+

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
FORK	RockShox Psylo SL, U-Turn adjustable travel	
	Travel, mm	*80-125*
	Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-12	
	Stroke	*2*
	Length	*7.875*
	Width	*22.2mm*
	Eyes	*6mm*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Race, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race	
	Steerer clamp height, mm	*44.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore XT	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Bontrager Race 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined	
	Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race ATB, tubeless compatible, 24°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
FRONT TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
REAR WHEEL	Bontrager Race ATB, tubeless compatible, 28°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
REAR TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*251, Radial*
	Rear, mm	*265/267, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Time ATAC, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Race wheels- light and strong

IRC Backcountry tires- big, 2.25 casing is extra grippy

Components

Durable, yet light weight level- XTR, XT

RockShox Psylo fork- adjustable U-Turn travel and massive stanchions for excellent steering control

Cane Creek AD-12 shock- air/air system is light, easily tunable

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.2 lb.
12.35 kg.

COLORS

Flipping Green • Black/White decal • Black fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	75
	Cm	169	177	185	190
Handlebar	Width, mm	630	630	630	630
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	182.5	197.5	217.5	237.5

Sugar 2+ Disc

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
FORK	RockShox Psylo SL, U-Turn adjustable travel	
	Travel, mm	*80-125*
	Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-12	
	Stroke	*2*
	Length	*7.875*
	Width	*22.2mm*
	Eyes	*6mm*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Race, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race	
	Steerer clamp height, mm	*44.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Hydraulic, attached to brake	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore XT	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Bontrager Race 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined	
	Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*538*
	Rim strip	*Velox 22mm*
FRONT TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
REAR WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*538*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*266-264, 3x*
	Rear, mm	*264/265, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Hayes Mag, full hydraulic disc	
	Rotor diameter, 6.3 in.	*Bolt circle diameter, 44mm*
PEDALS	Time ATAC, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Race wheels- light and strong

IRC Backcountry tires- big, 2.25 casing is extra grippy

Components

Durable, yet light weight level- XTR, XT

RockShox Psylo fork- adjustable U-Turn travel and massive stanchions for excellent steering control

Cane Creek AD-12 shock- air/air system is light, easily tunable

Hayes hydraulic disc brakes- extra control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

28.2 lb.
12.80 kg.

COLORS

Flipping Green • Black/White decal • Black fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	75
	Cm	169	177	185	190
Handlebar	Width, mm	630	630	630	630
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	182.5	197.5	217.5	237.5

Sugar 3+

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
FORK	Manitou Black Elite, adjustable travel	
	Travel, mm	*80-100*
	Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-5	
	Stroke	*2*
	Length	*7.875*
	Width	*22.2mm*
	Eyes	*6mm*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano Deore XT SGS	
CRANKSET	Bontrager Comp 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN52	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select ATB, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
REAR WHEEL	Bontrager Select ATB, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Backcountry	
	Tire size	*26 x 2.25*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/269, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Avid Single Digit 3, linear pull	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Select wheels- light and strong

IRC Backcountry tires- big, 2.25 casing is extra grippy

Components

Durable, yet light weight- XT, LX

Manitou Black fork- adjustable travel and massive stanchions for excellent steering control

Cane Creek AD-5 shock- air/air system is light, easily tunable

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.6 lb.
12.53 kg.

COLORS

Blue Metallic • White/Silver Metallic decal • Candy Chrome fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	75
	Cm	168	177	186	191
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	179.0	194.0	214.0	234.0

Sugar 3+ Disc

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000
STAYS	Platinum series aluminum
FORK	Manitou Black Elite, adjustable travel
Travel, mm	*80-100*
Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-5
Stroke	*2*
Length	*7.875*
Width	*22.2mm*
Eyes	*6mm*
HEADSET	SAS Aheadset, alloy
Size	*25.4/34.0/30.0*
Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise
Clamp diameter, mm	
STEM	Bontrager Comp
Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+
BRAKE LEVERS	Hydraulic, attached to brake
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX
Cable routing	*Top pull*
Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano Deore XT SGS
CRANKSET	Bontrager Comp 44/32/22
Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN52
Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72
Chain type	*9 speed*
Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd

WHEELSET

FRONT WHEEL	Bontrager Race Disc, 28°
E.R.D., mm	*538*
Rim strip	*Velox 22mm*
FRONT TIRE	IRC Backcountry
Tire size	*26 x 2.25*
REAR WHEEL	Bontrager Race Disc, 28°
E.R.D., mm	*538*
Rim strip	*Velox 22mm*
REAR TIRE	IRC Backcountry
Tire size	*26 x 2.25*
SPOKES	DT 14/15G butted stainless, alloy nipples
Front, mm	*266/264, 3x*
Rear, mm	*264/265, 3x*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails
BRAKES	Hayes HFX Comp, full hydraulic disc
Rotor diameter, 6.3 in.	*Bolt circle diameter, 44mm*
PEDALS	Shimano SPD M515, clipless
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (1 on seatpost), replaceable derailleur hanger

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Select wheels- light and strong

IRC Backcountry tires- big, 2.25 casing is extra grippy

Components

Durable, yet light weight- XT, LX

Manitou Black fork- adjustable travel and massive stanchions for excellent steering control

Cane Creek AD-5 shock- air/air system is light, easily tunable

Hayes disc brakes- powerful stoppers for better control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

28.6 lb.
12.98 kg.

COLORS

Blue Metallic • White/Silver Metallic decal • Candy Chrome fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	75
	Cm	168	177	186	191
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	179.0	194.0	214.0	234.0

Sugar 3+ GS

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000
STAYS	Platinum series aluminum
FORK	Manitou Black Elite Diva, adjustible travel
Travel, mm	*80-100*
Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-5
Stroke	*2*
Length	*7.875*
Width	*22.2mm*
Eyes	*6mm*
HEADSET	SAS Aheadset, alloy
Size	*25.4/34.0/30.0*
Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise
Clamp diameter, mm	*25.4*
STEM	Bontrager Comp
Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+
BRAKE LEVERS	Alloy, direct pull, woman's reach
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX
Cable routing	*Top pull*
Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano Deore XT SGS
CRANKSET	Bontrager Comp 44/32/22
Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN52
Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72
Chain type	*9 speed*
Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd

WHEELSET

FRONT WHEEL	Bontrager Select ATB, 24°
E.R.D., mm	*542*
Rim strip	*Velox 19mm*
FRONT TIRE	IRC Backcountry
Tire size	*26 x 2.25*
REAR WHEEL	Bontrager Select ATB, 28°
E.R.D., mm	*542*
Rim strip	*Velox 22mm*
REAR TIRE	IRC Backcountry
Tire size	*26 x 2.25*
SPOKES	DT 14G stainless
Front, mm	*254, Radial*
Rear, mm	*267/269, 3x*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, women's, CrMo rails
BRAKES	Avid Single Digit 3, linear pull
PEDALS	Shimano SPD M515, clipless
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts (plus seatpost mount), replaceable derailleur hanger

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesisters geometry- stable, fast, made for a woman

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Select wheels- light and strong

IRC Backcountry tires- big, 2.25 casing is extra grippy

Components

Durable, yet light weight- XT, LX

Manitou Black fork- adjustable travel and massive stanchions for excellent steering control

Cane Creek AD-5 shock- air/air system is light, easily tunable

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.6 lb.
12.53 kg.

COLORS

Blue Metallic/White Pearl• White/Light Blue decal • White fork

FIT

Frame	Size	S	M
Rider height	Inches	65	68
	Cm	166	172
Handlebar	Width, mm	600	600
Stem	Length, mm	75	75
	Angle	5	5
Crank	Length, mm	170	175
Seatpost	Length, mm	300	350
Steerer	Length, mm	179.0	194.0

Sugar 4+

Sweetness. Nickname for an especially dear friend

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
FORK	Manitou Black Comp, adjustable travel	
	Travel, mm	*80-100*
	Axle-crown length, mm	*451*
REAR SHOCK	Cane Creek AD-5	
	Stroke	*2*
	Length	*7.875*
	Width	*22.2mm*
	Eyes	*6mm*
HEADSET	STS Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Sport	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano Deore LX SGS	
CRANKSET	Bontrager Sport 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/269, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	1 water bottle mount, replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider

Frameset

Sybil link suspension- adjustable rear wheel travel from 2.8 to 4.1 inches (80 to 105mm).

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Superstock wheels- light and strong

IRC Mythos XC tires- all-round treads

Components

Durable, yet light weight- Shimano LX

Manitou Black fork- adjustable travel and massive stanchions for excellent steering control

Cane Creek AD-5 shock- air/air system is light, easily tunable

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

28.9 lb.
13.12 kg.

COLORS

Black Metallic • White/Silver decal • Candy Chrome fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	75
	Cm	168	178	186	191
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	15	15	15	15
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	175.2	190.2	210.2	230.2

RePack frameset

Professional Downhill Racing

For years now, Fisher has sponsored top downhillers. Riding bikes that were largely custom one-offs, our Pros have consistently been among the top riders, and have stood on the very top of the podium. Through constant development and innovation, our Race Department has been on the cutting edge to support the needs of our riders.

Until now, only our Pros could ride these bikes. We simply did not make downhill bikes for any one else.

Downhill Thrills

The sport of downhilling today has changed. It is no longer the exclusive domain of high-paid pros, but has become the sport of choice of local riders. These folks crave the thrills and technical challenge of zooming their favorite trail at high speed (responsibly, please!). For those pushing the edge, a standard mountain bike just doesn't offer the performance needed.

The new Fisher Repack

For 2002, we have finally unleashed our awesome downhill frame for public consumption. Here's what the Repack has to offer-

• 8 inches of rear wheel travel, and designed for a 6-8" travel triple-clamp fork

• Extremely beefy construction- tubes, links, pivots, all are designed for the forces generated by our Pros

• Swappable, bolt-on rear dropouts. The bolt-on pattern allows you to change the length of the chainstays (and the bottom bracket elevation), or switch from standard quick-release wheels to a through-axle. This makes the ride tunable, and the frame is compatible with all popular downhill wheel types

• Patented chain tensioner- by allowing you to move the tensioner you get precise and powerful chain containment with any chainring size you choose to use (downhill bikes like to throw their chains off at inappropriate times). Even cooler, the location of the tensioner prevents inchworming of the suspension when pedaling.

The frame comes in two sizes, 14.5 and 16".

Colors: Black • Red/White decals (not supplied with a fork) ?

Rear shock

Eye to eye
Eye width
Eye I.D.
Stroke

Diesel DH

	Frame sizes	14.5	16
	Head angle	70.0	70.0
	Seat angle	71.0	71.0
MILLIMETERS	Standover	700	716
	Seat tube	368	406
	Head tube	112	112
	Eff top tube	570	592
	Chainstays	420	420
	BB height	323	323
	Offset	33.0	33.0
	Trail	80	80
	Wheelbase	1032	1054
INCHES	Standover	27.6	28.2
	Seat tube	14.5	16.0
	Head tube	4.4	4.4
	Eff top tube	22.4	23.3
	Chainstays	16.5	16.5
	BB height	12.7	12.7
	Offset	1.6	1.6
	Trail	3.1	3.1
	Wheelbase	40.6	41.5

All new for 2002

This is a new frame platform for the 2002 model year, but it borrows heavily from proven Gary Fisher technology. Most importantly, this is Genesis geomtry for a compfrotable rider position and the stablity and handling of a long front-center.

The 29er frames also use the new ZR9000 aluminum alloy for low frame weights and very high strength.

Last, the 29ers use the new, oversized wheel standard. Its a Genesis Supersize!

Geometry

The 29er uses Genesis geometry, adapted for the larger wheels.

Ride

The 29er is a great mountain bike for all types of riding, but really excells in soft conditions liek sand or mud where its oveersized wheels reduce rolling resistance. Lower resistance means either faster speeds, less work, or both. And the float of those big hoops enhances control in the same conditions.

Likewise, the larger wheels make for a smooth ride, which some people compare to suspension...only this is a hardtail, with all the benefits of lwer frame weight and no suspension movement.

Frame details

The 29er uses Platinum series ZR9000 aluminumframe technology.

Full 'top tube' (actually, the side of the main frame) cable routing keeps the cables out of the muck for friction free shifting and braking.

Special parts

Derailleur hanger ....

	Frame sizes	S	M	L	XL
	Head angle	70.5	71.0	71.5	71.5
	Seat angle	74.0	74.0	73.5	73.0
MILLIMETERS					
	Standover	695	729	757	799
	Seat tube	394	442	479	529
	Head tube	80	80	90	105
	Eff top tube	590	608	628	647
	Chainstays	440	440	440	440
	BB height	292	292	292	297
	Offset	42.0	42.0	42.0	42.0
	Trail	87	83	80	80
	Wheelbase	1081	1094	1103	1119
INCHES					
	Standover	27.3	28.7	29.8	31.5
	Seat tube	15.5	17.4	18.9	20.8
	Head tube	3.1	3.1	3.5	4.1
	Eff top tube	23.2	23.9	24.7	25.5
	Chainstays	17.3	17.3	17.3	17.3
	BB height	11.5	11.5	11.5	11.7
	Offset	1.7	1.7	1.7	1.7
	Trail	3.4	3.3	3.1	3.1
	Wheelbase	42.6	43.1	43.4	44.1

Supercaliber 29

Above any ranking. Beyond the professional

FRAMESET

MAIN TUBES	Platinum series butted ZR9000
STAYS	Platinum series aluminum
FORK	Marzocchi Marathon
Travel, mm	*80*
Axle-crown length, mm	*479*
HEADSET	Cane Creek S-6 Aheadset, alloy
Size	*25.4/34.0/30.0*
Stack height, mm	*27.1*

CONTROLS

HANDLEBAR	Bontrager Race Lite
Clamp diameter, mm	*25.4*
STEM	Bontrager Race Lite
Steerer clamp height, mm	*39.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL
BRAKE LEVERS	Integrated brake/shift
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Deore XT
Cable routing	*Top pull*
Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano XTR SGS
CRANKSET	Bontrager Race Lite 44/32/22
Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined
Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-92
Chain type	*9 speed*
Chain length (links)	*106*
CASSETTE	Shimano Deore XT 11-34, 9spd

WHEELSET

FRONT WHEEL	Bontrager Race Lite ATB 29", 24°
E.R.D., mm	*600*
Rim strip	*Velox 22mm*
FRONT TIRE	IRC Notos XC, 127tpi, folding
Tire size	*29 x 2.1*
REAR WHEEL	Bontrager Race Lite ATB 29", 28°
E.R.D., mm	*603*
Rim strip	*Velox 22mm*
REAR TIRE	IRC Notos XC, 127tpi, folding
Tire size	*29 x 2.1*
SPOKES	DT Revolution 14/17G, alloy nipples
Front, mm	*283, Radial*
Rear, mm	*299/301, 3x*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Race
Outer diameter, mm	*31.6*
SADDLE	SSM Era, Ti/leather
BRAKES	Avid Single Digit Ti, linear pull
PEDALS	Time ATAC Carbon, clipless
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts, rack mounts

Why this Fisher rocks:

Rider: Racer, or all-round hardtail rider

Frameset

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Race Lite- super light wheels for acceleration

29"- smooth, fast, and with excellent handling

Components

Race level- XTR, XT

Marzocchi Marathon 29" fork- plush riding, and beefy for control

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	58	84	116
13	49	71	98
15	43	62	85
17	38	55	75
20	32	46	64
23	28	40	55
26	25	36	49
30	21	31	43
34	19	27	38

BIKE WEIGHT

23.0 lb.
10.44 kg.

COLORS

Red/Blue Metallic • Yellow/Red decal • Apple Candy Red fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	71	74	75
	Cm	174	180	188	190
Handlebar	Width, mm	600	600	600	600
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	165.6	165.6	175.6	190.6

Mt. Tam. 29

(short for Tamalpais) The Birthplace of Mountain bikes; a 2700 foot mountain in Marin County,

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
FORK	Marzocchi MXR Air	
	Travel, mm	*80*
	Axle-crown length, mm	*479*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Race	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race	
	Steerer clamp height, mm	*44.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore XT	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Bontrager Race 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined	
	Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race ATB 29", 24°	
	E.R.D., mm	*600*
	Rim strip	*Velox 22mm*
FRONT TIRE	IRC Notos XC, 127tpi, folding	
	Tire size	*29 x 2.1*
REAR WHEEL	Bontrager Race ATB 29", 28°	
	E.R.D., mm	*603*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Notos XC, 127tpi, folding	
	Tire size	*29 x 2.1*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*282, Radial*
	Rear, mm	*296/299, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Time ATAC, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts, rack mounts	

Why this Fisher rocks:

Rider: Racer, or all-round hardtail rider

Frameset

Genesis geometry- stable, fast

Platinum series ZR9000 aluminum- light, super strong

Wheelset

Bontrager Race- super light wheels for acceleration

29"- smooth, fast, and with excellent handling

Components

Race level- XTR, XT

Marzocchi MXR Air 29" fork- plush riding, and beefy for control

Bontrager bar/stem, post- super strong

GEARING

	22	32	44
11	58	84	116
12	53	77	106
14	46	66	91
16	40	58	80
18	35	52	71
21	30	44	61
24	27	39	53
28	23	33	46
32	20	29	40

BIKE WEIGHT

25.1 lb.
11.40 kg.

COLORS

Blue Metallic/Flipping Green • Silver/White decal • Metallic Grey fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	69	71	74	75
	Cm	174	181	188	191
Handlebar	Width, mm	600	600	600	600
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	390	390	390
Steerer	Length, mm	170.5	170.5	180.5	195.5

Genesis Hardtails

New for 2002

The Genesis hardtails were introduced in the 1998 model year. The 2002 frame geometry is unchanged, but a new frame material on the Platinum series, called ZR9000, makes the new frames lighter and at the same time, stronger.

Geometry

The regular Genesis hardtails hardtail uses Gary Fisher's race-proven Genesis Geometry.

The Genesisters bikes use these same concepts, but adapted to fit and perform for a woman. The handlebar position, through frame and specs, reduce the stress on a woman's back when riding. The position balances her weight over the bottom bracket so she gets the most pedal power possible, and over the wheels for optimum handling. This is complimented by smart specs for an overall ergonomic fit for a woman.

Ride

The Genesis hardtail frame is one of the lightest racing hardtails ever produced. Of the bikes that can compete with this frame in weight, only the Fisher frame has Genesis geometry.

With their oversize aluminum tubes, high lateral frame rigidity and super-short chainstays, Genesis hardtails provide amazing rear wheel traction.

The Genesis geometry makes these bikes super handling, especially at racing speeds.

Frame details

The Genesis hardtails use our Platinum and Gold series frame technology. The head tube, is double butted to reduce weight and support the headset cups.

Full top tube cable routing with 'bullet' stops keeps the cables out of the muck for friction free shifting and braking. The bullet stops have a smooth junction with the frame, and rounded corners, so prevent things (like your clothes) from snagging.

The dropouts, brake yoke, and other details on the Genesis hardtails are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

The Genesis hardtail frame uses a special dropout to accommodate a disc brake adapter. This adapter provides mounting for an International style rear disc brake.

Genesis hardtail frames have 3 water bottle mounts.

Special Parts

Derailleur hanger ....
Disc brake adapter ..

Genesis hardtails

	Frame sizes	XS	S	M	L	XL
	Head angle	70.5	71.0	71.5	71.5	71.5
	Seat angle	74.5	74.0	74.0	73.5	73.0
MILLIMETERS	Standover	692	725	756	783	818
	Seat tube	332	396	446	484	535
	Head tube	90	90	105	125	145
	Eff top tube	552	582	608	628	647
	Chainstays	413	413	413	413	413
	BB height	287	292	292	292	297
	Offset	41.9	41.9	41.9	41.9	41.9
	Trail	74	71	68	68	68
	Wheelbase	1031	1053	1075	1091	1107
INCHES	Standover	27.2	28.5	29.8	30.8	32.2
	Seat tube	13.1	15.6	17.6	19.1	21.1
	Head tube	3.5	3.5	4.1	4.9	5.7
	Eff top tube	21.7	22.9	23.9	24.7	25.5
	Chainstays	16.3	16.3	16.3	16.3	16.3
	BB height	11.3	11.5	11.5	11.5	11.7
	Offset	1.6	1.6	1.6	1.6	1.6
	Trail	2.9	2.8	2.7	2.7	2.7
	Wheelbase	40.6	41.4	42.3	42.9	43.6

Genesisters hardtails

	Frame sizes	**XS**	**S**	**M**
	Head angle	**70.5**	**70.5**	**71.0**
	Seat angle	**74.5**	**74.0**	**74.0**
MILLIMETERS	**Standover**	**654**	**696**	**733**
	Seat tube	**332**	**396**	**446**
	Head tube	**90**	**90**	**105**
	Eff top tube	**552**	**567**	**595**
	Chainstays	**413**	**413**	**413**
	BB height	**287**	**292**	**292**
	Offset	**41.9**	**41.9**	**41.9**
	Trail	**74**	**74**	**71**
	Wheelbase	**1031**	**1042**	**1066**
INCHES	**Standover**	**25.7**	**27.4**	**28.9**
	Seat tube	**13.1**	**15.6**	**17.6**
	Head tube	**3.5**	**3.5**	**4.1**
	Eff top tube	**21.7**	**22.3**	**23.4**
	Chainstays	**16.3**	**16.3**	**16.3**
	BB height	**11.3**	**11.5**	**11.5**
	Offset	**1.6**	**1.6**	**1.6**
	Trail	**2.9**	**2.9**	**2.8**
	Wheelbase	**40.6**	**41.0**	**42.0**

Paragon

The lofty ideal. Perfection.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*3.1 lb (1.41 kg)*
FORK	Manitou Mars Elite	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Race, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano XTR SGS	
CRANKSET	Bontrager Race 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Bontrager Race, ISIS splined	
	Shell x axle, mm	*73 x 113, Splined, ISIS*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race ATB, tubeless compatible, 24°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
FRONT TIRE	IRC Serac XC, folding	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Race ATB, tubeless compatible, 28°	
	E.R.D., mm	*539*
	Rim strip	*Tubeless*
REAR TIRE	IRC Serac XC, folding	
	Tire size	*26 x 2.1*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*251, Radial*
	Rear, mm	*265/267, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Laser V Race, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts, replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

- Genesis geometry- stable, fast
- Platinum series ZR9000 aluminum- light, super strong

Wheelset

- Bontrager Superstock wheels- light, strong
- IRC Serac XC tires- fast, yet grippy

Components

- Expert level- LX/XTR, Bontrager Race crankset
- Manitou fork- superb TPC damping and steering control
- Bontrager Crowbar- riser for comfort, wide for control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

23.1 lb.
10.49 kg.

COLORS

Red Metallic/Metallic • Blue/White decal • Deep Candy Red fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	72	75	76
	Cm	174	182	190	194
Handlebar	Width, mm	630	630	630	630
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	177.0	192.0	212.0	232.0

Big Sur

Town on the California coast just south of Monterey. Robert Louis Stevenson said this was the most beautiful place on Earth where land meets sea.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*3.5 lb (1.59 kg)*
FORK	Manitou Black Elite, adjustable travel	
	Travel, mm	*80-100*
	Axle-crown length, mm	*451*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore XT SGS	
CRANKSET	Bontrager Comp 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/269, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Shimano M420, V type	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts, replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

- Genesis geometry- stable, fast
- Platinum series ZR9000 aluminum- light, super strong

Wheelset

- Bontrager Superstock wheels- light, strong
- IRC Mythos XC tires- great all-round treads

Components

- Expert level- LX/XT, Bontrager Comp crankset
- Manitou Black fork- adjustable travel
- Bontrager Crowbar- riser for comfort, wide for control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

26.7 lb.
12.12 kg.

COLORS

Black Chrome/Black Metallic • White/Black decal • Candy Chrome fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	71	75	76
	Cm	173	181	190	193
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	175.2	190.2	210.2	230.2

Big Sur Disc

Town on the California coast just south of Monterey. Robert Louis Stevenson said this was the most beautiful place on Earth where land meets sea.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*3.5 lb (1.59 kg)*
FORK	Manitou Black Elite, adj. travel (80-100mm)	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Hydraulic, attached to brake	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore XT SGS	
CRANKSET	Bontrager Comp 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP27	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
SPOKES	DT 14G stainless	
	Front, mm	*267/267, 3x*
	Rear, mm	*267/267, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Hayes HFX Comp, full hydraulic disc	
	Rotor diameter, 6.3 in.	*Bolt circle diameter, 44mm*
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts, replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

- Genesis geometry- stable, fast
- Platinum series ZR9000 aluminum- light, super strong

Wheelset

- Bontrager Superstock wheels- light, strong
- IRC Mythos XC tires- great all-round treads

Components

- Expert level- LX/XT, Bontrager Comp crankset
- Manitou Black fork- adjustable travel
- Bontrager Crowbar- riser for comfort, wide for control
- Hayes disc brakes- great control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.1 lb.
12.30 kg.

COLORS

Black Chrome/Black Metallic • White/Black decal • Candy Chrome fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	71	75	76
	Cm	173	181	190	193
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	175.2	190.2	210.2	230.2

Big Sur GS

Town on the California coast just south of Monterey. Robert Louis Stevenson said this was the most beautiful place on Earth where land meets sea.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*3.5 lb (1.59 kg)*
FORK	Manitou Black Elite Diva, adj. travel (80-100mm)	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Alloy, direct pull, woman's reach	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore XT SGS	
CRANKSET	Bontrager Comp 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock, 24º	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28º	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/269, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X, Women's	
BRAKES	Shimano M420, V type	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts (2 on XS), replaceable derailleur hanger	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

- Genesisters geometry- stable, fast for a woman
- Platinum series ZR9000 aluminum- light, super strong

Wheelset

- Bontrager Superstock wheels- light, strong
- IRC Mythos XC tires- great all-round treads

Components

- Expert level- LX/XT, Bontrager Comp crankset
- Manitou Black fork- adjustable travel
- Bontrager Crowbar- riser for comfort, wide for control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

26.2 lb.
11.89 kg.

COLORS

Pearl White/Blue Metallic • White/Blue decal • White fork

FIT

Frame	Size	XS	S	M
Rider height	Inches	65	67	70
	Cm	166	171	177
Handlebar	Width, mm	600	600	600
Stem	Length, mm	60	75	75
	Angle	5	5	5
Crank	Length, mm	170	170	175
Seatpost	Length, mm	300	300	350
Steerer	Length, mm	175.0	175.0	190.0

Hoo Koo E Koo

Mewok Indian name for the tribe of Indians living near the bottom of Mount Tam.

FRAMESET

MAIN TUBES	Gold series 6061 T6 aluminum
STAYS	Gold series 6061 T6 aluminum
Frame weight	*3.5 lb (1.59 kg)*
FORK	Marzocchi EXR
Travel, mm	*80*
Axle-crown length, mm	*451*
HEADSET	STR Aheadset
Size	*25.4/34.0/30.0*
Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise
Clamp diameter, mm	*25.4*
STEM	Bontrager Sport
Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+
BRAKE LEVERS	Alloy, direct pull
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Deore
Cable routing	*Top pull*
Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX SGS
CRANKSET	Bontrager Sport 44/32/22
Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28
Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53
Chain type	*9 speed*
Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm	*542*
Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
REAR WHEEL	Shimano hub, 32°, Bontrager Corvair OSB rim
E.R.D., mm	*542*
Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
SPOKES	14G stainless
Front, mm	*266, 3x*
Rear, mm	*263/265, 3x*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*31.6*
SADDLE	WTB SST.X
BRAKES	Alloy direct pull
PEDALS	Shimano SPD M515, clipless
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR
Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts (2 on XS), replaceable derailleur hanger

Why this Fisher rocks:

Rider: Athletic every-day or Adventure rider

Frameset

- Genesis geometry- stable, fast
- Gold series aluminum- super strong

Wheelset

- Bontrager rims- light, strong, smooth braking
- IRC Mythos XC tires- great all-round treads

Components

- Enthusiast level- LX, Deore
- Manitou fork- steering control
- Bontrager Crowbar- riser for comfort, wide for control
- Shimano clipless pedals- double-sided, user friendly

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.1 lb.
12.30 kg.

COLORS

Black Metallic/Blue Metallic • Black/White Metallic decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	65	69	72	75	76
	Cm	165	174	183	190	194
Handlebar	Width, mm	620	620	620	620	620
Stem	Length, mm	60	75	90	105	105
	Angle	15	15	15	15	15
Crank	Length, mm	170	170	175	175	175
Seatpost	Length, mm	300	300	350	350	350
Steerer	Length, mm	175.2	175.2	190.2	210.2	230.2

Tassajara

A retreat near Big Sur. Indian name for a place where meats are cooked.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
	Frame weight	*3.9 lb (1.77 kg)*
FORK	Manitou Six Elite	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Sport	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*Plate style w/34.9mm clamp*
RR DERAILLEUR	Shimano Deore SGS	
CRANKSET	Bontrager Sport 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP27	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
REAR WHEEL	Shimano hub, 32°, Bontrager Corvair OSB rim	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 2.1*
SPOKES	DT 14G stainless	
	Front, mm	*266, 3x*
	Rear, mm	*263/265, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*29.2*
SADDLE	WTB SST.X	
BRAKES	Alloy direct pull	
PEDALS	Alloy platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*35.0*
ADDITIONALS	2 water bottle mounts (1 on XS), rack mounts	

Why this Fisher rocks:

Rider: Athletic every-day or Adventure rider

Frameset

- Genesis geometry- stable, fast
- Silver series aluminum- super strong

Wheelset

- Bontrager rims- light, strong, smooth braking
- IRC Mythos XC tires- good all-round treads

Components

- Enthusiast level- Shimano Deore
- Manitou fork- great steering control
- Bontrager Crowbar- riser for comfort, wide for control
- Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

28.0 lb.
12.71 kg.

COLORS

Black Metallic/Gold Metallic • White/Silver Metallic decal • Black fork
Black/Red • Black/Silver decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	65	69	72	75	76
	Cm	165	174	183	190	194
Handlebar	Width, mm	620	620	620	620	620
Stem	Length, mm	60	75	90	105	105
	Angle	15	15	15	15	15
Crank	Length, mm	170	170	175	175	175
Seatpost	Length, mm	300	300	350	350	350
Steerer	Length, mm	175.2	175.2	190.2	210.2	230.2

Tassajara Disc

A retreat near Big Sur. Indian name for a place where meats are cooked.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
	Frame weight	*3.9 lb (1.77 kg)*
FORK	Manitou Six Elite	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Sport	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Hydraulic, attached to brake	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore SGS	
CRANKSET	Bontrager Sport 44/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28	
	Shell x axle, mm	*73 x 110, Square*
CHAIN	Shimano HG-53	
	Chain type	*3/32"*
	Chain length (links)	*104*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Alloy, disc QR hub, 32°, Btrg Corvair OSB rim	
	E.R.D., mm	*554.5*
	Rim strip	*Rubber*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 1.95*
REAR WHEEL	Alloy, disc QR hub, 32°, Btrg Corvair OSB rim	
	E.R.D., mm	*554.5*
	Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 1.95*
SPOKES	15G stainless	
	Front, mm	*, 2x*
	Rear, mm	*, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*29.2*
SADDLE	WTB SST.X	
BRAKES	Hayes HFX Comp, full hydraulic disc	
	Rotor diameter	*6.3 in.*
	Bolt circle diameter	*44mm*
PEDALS	Alloy platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*34.9*
ADDITIONALS	2 water bottle mounts (1 on XS), rack mounts	

Why this Fisher rocks:

Rider: Athletic every-day or Adventure rider

Frameset

- Genesis geometry- stable, fast
- Silver series aluminum- super strong

Wheelset

- Bontrager rims- light, strong, smooth braking
- IRC Mythos XC tires- good all-round treads

Components

- Enthusiast level- Shimano Deore
- Manitou fork- great steering control
- Bontrager Crowbar- riser for comfort, wide for control
- Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle
- Hayes disc brakes- superior speed control

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

30.0 lb.
13.62 kg.

COLORS

Black/Red • Black/Silver decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	66	69	73	76	77
	Cm	167	175	185	192	196
Handlebar	Width, mm	580	580	600	600	620
Stem	Length, mm	60	75	90	105	105
	Angle	15	15	15	15	15
Crank	Length, mm	170	170	175	175	175
Seatpost	Length, mm	300	300	350	350	350
Steerer	Length, mm	191	191	206	226	246

Tassajara GS

A retreat near Big Sur. Indian name for a place where meats are cooked.

FRAMESET

MAIN TUBES	Silver series aluminum
STAYS	Silver series aluminum
Frame weight	*3.5 lb (1.59 kg)*
FORK	Manitou Six Elite Diva
Travel, mm	*80*
Axle-crown length, mm	*451*
HEADSET	STR Aheadset
Size	*25.4/34.0/30.0*
Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise
Clamp diameter, mm	*25.4*
STEM	Bontrager Sport
Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+
BRAKE LEVERS	Alloy, direct pull
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Deore
Cable routing	*Top pull*
Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore SGS
CRANKSET	Bontrager Sport 44/32/22
Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP28
Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53
Chain type	*9 speed*
Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm	*542*
Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
REAR WHEEL	Shimano hub, 32°, Bontrager Corvair OSB rim
E.R.D., mm	*542*
Rim strip	*Velox 22mm*
REAR TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
SPOKES	DT 14G stainless
Front, mm	*266, 3x*
Rear, mm	*263/265, 3xx*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*29.2*
SADDLE	WTB SST.X, Women's
BRAKES	Alloy direct pull
PEDALS	Alloy platform
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*35.0*
ADDITIONALS	2 water bottle mounts (1 on XS), replaceable derailleur hanger

Why this Fisher rocks:

Rider: Athletic every-day or Adventure rider

Frameset

- Genesisters geometry- stable, fast for a woman
- Silver series aluminum- super strong

Wheelset

- Bontrager rims- light, strong, smooth braking
- IRC Mythos XC tires- good all-round treads

Components

- Enthusiast level- Shimano Deore
- Manitou fork- great steering control
- Bontrager Crowbar- riser for comfort, wide for control
- Women's design- user friendly pedals, shorter cranks, wide bars for control, and comfy saddle

GEARING

	22	32	44
11	52	76	105
12	48	70	96
14	41	60	82
16	36	52	72
18	32	47	64
21	27	40	55
24	24	35	48
28	21	30	41
32	18	26	36

BIKE WEIGHT

27.7 lb.
12.58 kg.

COLORS

Silver Metallic/Pearl White • Black/Silver decal • White fork

FIT

Frame	Size	XS	S	M
Rider height	Inches	64	66	68
	Cm	163	168	174
Handlebar	Width, mm	600	600	600
Stem	Length, mm	60	75	75
	Angle	15	15	15
Crank	Length, mm	170	170	175
Seatpost	Length, mm	300	300	350
Steerer	Length, mm	175.2	175.2	190.2

Marlin

Big game fish known for its strength and beauty.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum
STAYS	Silver series 7005 aluminum
Frame weight	*3.9 lb (1.77 kg)*
FORK	RockShox Judy TT
Travel, mm	*80*
Axle-crown length, mm	*451*
HEADSET	STR Aheadset
Size	*25.4/34.0/30.0*
Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise
Clamp diameter, mm	*25.4*
STEM	Bontrager Sport
Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano EZ Fire+ EF33
BRAKE LEVERS	Integrated brake/shift
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano Altus
Cable routing	*Top pull*
Attachment	*Plate style w/34.9mm clamp*
RR DERAILLEUR	Shimano Alivio
CRANKSET	Shimano Altus 42/34/24
Bolt hole circle, mm	*Riveted*
BB	Shimano BB-CT92E
Shell x axle, mm	*73 x 121, Square*
CHAIN	IG-31
Chain type	*3/32"*
Chain length (links)	*106*
CASSETTE	SRAM 5.0 11-32, 8spd

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm	*542*
Rim strip	*Velox 19mm*
FRONT TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
REAR WHEEL	Shimano RM40 hub, 32°, Btrg Corvair rim
E.R.D., mm	*542*
Rim strip	*Velox 19mm*
REAR TIRE	IRC Mythos XC
Tire size	*26 x 2.1*
SPOKES	DT 14G stainless
Front, mm	*266, 3x*
Rear, mm	*263/265, 3x*
INNER TUBES	Schraeder valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*29.2*
SADDLE	WTB SST.X
BRAKES	Alloy direct pull
PEDALS	Alloy platform
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*35.0*
ADDITIONALS	2 water bottle mounts (1 on XS), rack mounts

Why this Fisher rocks:

Rider: Athletic every-day or Adventure rider

Frameset

Genesis geometry- stable, fast

Silver series aluminum- super strong

Wheelset

Bontrager rims- light, strong, smooth braking

IRC Mythos XC tires- good all-round treads

Components

Enthusiast level- Shimano Alivio, Bontrager accessories

Judy TT fork- great steering control

Bontrager Crowbar- riser for comfort, wide for control

Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle

GEARING

	24	34	42
11	57	81	100
12	52	74	92
14	45	64	79
16	39	56	69
18	35	50	61
21	30	42	52
26	24	34	42
32	20	28	34

BIKE WEIGHT

28.5 lb.
12.94 kg.

COLORS

Black Metallic /Yellow Metallic • Red/Black decal • Black fork
Silver Metallic/Titanium • White/Silver decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	65	68	72	75	76
	Cm	166	174	182	190	193
Handlebar	Width, mm	620	620	620	620	620
Stem	Length, mm	60	75	90	105	105
	Angle	15	15	15	15	15
Crank	Length, mm	170	170	170	170	170
Seatpost	Length, mm	300	300	350	350	350
Steerer	Length, mm	170.2	170.2	185.2	205.2	225.2

Genesis Unplugged

For 2002

These hardtails were updated in the 2001 model year. The frame is unchanged.

Geometry

The regular Genesis hardtails uses Gary Fisher's race-proven Genesis Geometry. These bikes use a slightly more recreational version of that race design. The rider sits more upright, and the steering has been tuned to offer increased stability with a little less weight on the front wheel.

Ride

These bikes are stable, yet still plenty nimble for some really fun singletrack riding. The most noticeable difference in the ride will be the slightly more comfortable, and less 'committed' riding position. Other than that, they still ride like a Fisher.

Frame details

These frames use our Cro-Moly and Hi-tensile steel technology. Steel is very durable, and has great ride characteristics tuned by 100 years of perfecting. With Fisher's intelligent design, its also astoundingly light weight.

These frames have 2 water bottle mounts.

	Frame sizes	XS	S	M	L	XL	XXL
	Head angle	70.5	71.0	71.5	71.5	71.5	72.0
	Seat angle	74.5	74.0	74.0	73.5	73.5	73.0
MILLIMETERS	Standover	646	701	743	772	811	
	Seat tube	324	401	451	490	540	604
	Head tube	105	125	145	165	185	225
	Eff top tube	545	568	586	604	622	640
	Chainstays	415	415	415	415	415	415
	BB height	288	291	295	295	295	295
	Offset	38.0	38.0	38.0	38.0	38.0	38.0
	Trail	79	75	72	72	72	69
	Wheelbase	1022	1037	1053	1067	1085	1093
INCHES	Standover	25.4	27.6	29.3	30.4	31.9	
	Seat tube	12.8	15.8	17.8	19.3	21.3	23.8
	Head tube	4.1	4.9	5.7	6.5	7.3	8.9
	Eff top tube	21.5	22.4	23.1	23.8	24.5	25.2
	Chainstays	16.3	16.3	16.3	16.3	16.3	16.3
	BB height	11.3	11.5	11.6	11.6	11.6	11.6
	Offset	1.5	1.5	1.5	1.5	1.5	1.5
	Trail	3.1	3.0	2.8	2.8	2.8	2.7
	Wheelbase	40.2	40.8	41.5	42.0	42.7	43.0

Fit Information Reminder

When considering the "Rider Height" portion of the Fit information on each page, bear in mind that we made these fit estimations with the stem at its highest point. With Ahead stems, that means all the spacers were under the stem. With quill stems, the handlebars reach their maximum height with the stem pulled up to the minimum insertion line. With adjustable stems, it's calculated with the stem at a 40 degree angle. Lowering the bars, or changing the parts, or changing the stem angle, changes the fit of the bike as well as its Rider Height. Primarily, if you lower the stem, the bike will fit a smaller person. If you make the stem more upright, it will also make the bike fit a smaller person.

Wahoo

Thin, silvery fish. Exclamation of excited fun.

FRAMESET		
MAIN TUBES	Double-butted Cro-Moly steel	
STAYS	Cro-Moly steel	
FORK	RockShox Judy TT	
	Travel, mm	*80*
	Axle-crown length, mm	*451.0*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS		
HANDLEBAR	Steel, 30mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Sport	
	Steerer clamp height, mm	*40.0*
SHIFT LEVERS	Shimano EF29	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN		
FT DERAILLEUR	Shimano C050	
	Cable routing	*Top pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Acera-X	
CRANKSET	FCM55, alloy, 42/34/24	
	Bolt hole circle, mm	*Riveted*
BB	Cartridge	
	Shell x axle, mm	*68 x 113, Square*
CHAIN	KMC Z-72	
	Chain type	*3/32"*
	Chain length (links)	*110*
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET		
FRONT WHEEL	Alloy, QR hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Rubber*
FRONT TIRE	IRC Mythos XC	
	Tire size	*26 x 1.95*
REAR WHEEL	Shimano RM40 hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Rubber*
REAR TIRE	IRC Mythos XC	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*265, 3x*
	Rear, mm	*262/263, 3x*
INNER TUBES	Schraeder valve	

OTHER		
SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*29.2*
SADDLE	Fisher Padded	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Kalloy M6 x 55	
	Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts (1 on XS, S), rack mounts	

Why this Fisher rocks:

Rider: Doubletrack rider or athletic newbie

Frameset

Adapted Genesis geometry- more upright design is stable, comfortable

Steel- tough and durable

Wheelset

Matrix rims- light, strong, smooth braking

IRC Mythos XC tires- great all-round treads

Components

Enthusiast level- Alivio, Acera

RockShox fork- comfort and control over bumps

Riser bar- riser for comfort, wide for control

Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle

GEARING

	24	34	42
11	57	81	100
12	52	74	92
14	45	64	79
16	39	56	69
18	35	50	61
21	30	42	52
26	24	34	42
32	20	28	34

BIKE WEIGHT

32.1 lb.
14.57 kg.

COLORS

Silver Metallic/Metallic Dark Green • White/Dark Silver decal • Silver Metallic fork
Black/Mirror Silver • White/Silver Metallic decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL	XXL
Rider height	Inches	68	70	74	76	79	81
	Cm	173	179	188	192	202	207
Handlebar	Width, mm	580	580	600	600	600	620
Stem	Length, mm	90	90	110	110	130	130
	Angle	25	25	25	25	25	25
Crank	Length, mm	170	170	175	175	175	175
Seatpost	Length, mm	300	300	350	350	350	350
Steerer	Length, mm	206	226	246	266	286	325

Mamba

A great dance you can do on your bike.

FRAMESET

MAIN TUBES	Hi Tensile steel	
STAYS	Hi Tensile steel	
FORK	SR XCC	
	Travel, mm	*63*
	Axle-crown length, mm	*448*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23*

CONTROLS

HANDLEBAR	Steel, 30mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano EF29	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano C051	
	Cable routing	*Top pull, (W-down)*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Altus GS	
CRANKSET	FCM35, alloy, 48/38/28	
	Bolt hole circle, mm	*Riveted*
BB	Semi-cartridge	
	Shell x axle, mm	*73 x 121.5, Square*
CHAIN	KMC Z-51	
	Chain type	*3/32"*
	Chain length (links)	*110*
CASSETTE	Sun Race 13-30, 7spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Rubber*
FRONT TIRE	Bontrager Connection	
	Tire size	*26 x 1.95*
REAR WHEEL	Alloy, QR hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Rubber*
REAR TIRE	Bontrager Connection	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*265, 3x*
	Rear, mm	*262-263, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*29.2*
SADDLE	Fisher Padded	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Bolt, M6 x 30	
	Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts (1 on XS, S), rack mounts	

Why this Fisher rocks:

Rider: Doubletrack rider or casual newbie

Frameset

Adapted Genesis geometry- more upright design is stable, comfortable

Steel- tough and durable

Wheelset

Matrix rims- light, strong, smooth braking

Bontrager Connection tires- big for comfort, reduced knob size for easy pedaling

Components

Recreation level- Alivio, 24 speed, 'V' type brakes

RockShox fork- comfort and control over bumps

Riser bar- riser for comfort, wide for control

Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle

GEARING

	28	38	48
13	56	77	97
15	49	66	84
17	43	59	74
19	39	52	66
22	33	45	57
25	29	40	50
30	24	33	42

BIKE WEIGHT

32.7 lb.
14.85 kg.

COLORS

Yellow Metallic/Black Metallic • White/Silver decal • Yellow Metallic fork
Silver Metallic/Red • Black/White decal • Silver fork

FIT

Frame	Size	XS	S	M	L	XL	LS-M
Rider height	Inches	68	70	74	76	79	73
	Cm	173	179	188	192	201	186
Handlebar	Width, mm	580	580	600	600	600	600
Stem	Length, mm	90	90	110	110	130	110
	Angle	25	25	25	25	25	40
Crank	Length, mm	170	170	175	175	175	170
Seatpost	Length, mm	300	300	350	350	350	300
Steerer	Length, mm	206	226	246	266	286	246

Tarpon

Big (up to 100 lbs.) game fish

FRAMESET

MAIN TUBES	Hi Tensile steel
STAYS	Hi Tensile steel
FORK	High tensile steel
Travel, mm	
Axle-crown length, mm	*398*
HEADSET	Sealed
Size	*25.4/34.0/30.0*
Stack height, mm	*36.5*

CONTROLS

HANDLEBAR	Steel, 30mm rise
Clamp diameter, mm	*25.4*
STEM	Steel ATB
Steerer clamp height, mm	
SHIFT LEVERS	Shimano EF29
BRAKE LEVERS	Integrated brake/shift
GRIPS	Serfas dual density

DRIVETRAIN

FT DERAILLEUR	Shimano C051
Cable routing	*Top pull, (W-down)*
Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Altus GS
CRANKSET	FCM35, alloy, 48/38/28
Bolt hole circle, mm	*Riveted*
BB	Semi-cartridge
Shell x axle, mm	*68 x 122.5, Square*
CHAIN	KMC Z-51
Chain type	*3/32"*
Chain length (links)	*110*
CASSETTE	Sun Race 13-30, 7spd

WHEELSET

FRONT WHEEL	Alloy, QR hub, 36°, Matrix 550 rim
E.R.D., mm	*559*
Rim strip	*Rubber*
FRONT TIRE	Bontrager Connection
Tire size	*26 x 1.95*
REAR WHEEL	Alloy, QR hub, 36°, Matrix 550 rim
E.R.D., mm	*559*
Rim strip	*Rubber*
REAR TIRE	Bontrager Connection
Tire size	*26 x 1.95*
SPOKES	14G stainless
Front, mm	*265, 3x*
Rear, mm	*262/263, 3x*
INNER TUBES	Schraeder valve

OTHER

SEATPOST	Alloy micro-adjust
Outer diameter, mm	*29.2*
SADDLE	Fisher Padded
BRAKES	Alloy direct pull
PEDALS	Platform
Axle diameter	*9/16"*
SEAT BINDER	Bolt, M6 x 30
Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts (1 on XS, S), rack mounts

Why this Fisher rocks:

Rider: Casual doubletrack rider or newbie

Frameset

Adapted Genesis geometry- more upright design is stable, comfortable

Steel- tough and durable

Wheelset

Matrix rims- light, strong, smooth braking

Bontrager Connection tires- big for comfort, reduced knob size for easy pedaling

Components

Recreation level- 21 speed, 'V' type brakes

Riser handlebar- riser for comfort, wide for control

Attention to comfort points- user friendly pedals, wide bars for control, and comfy saddle

GEARING

	28	38	48
13	56	77	97
15	49	66	84
17	43	59	74
19	39	52	66
22	33	45	57
25	29	40	50
30	24	33	42

BIKE WEIGHT

31.1 lb.
14.12 kg.

COLORS

Pearl White/Silver Metallic • Black/White decal • Pearl White fork
Silver Metallic/Blue Metallic • White/Silver decal • Silver Metallic fork

FIT

Frame	Size	XS	S	M	L	XL	LS-S	LS-M
Rider height	Inches	67	69	72	75	79	67	71
	Cm	170	175	184	191	200	170	181
Handlebar	Width, mm	580	580	600	600	600	580	600
Stem	Length, mm	90	90	105	120	135	105	105
	Angle	25	25	25	25	25	40	40
Crank	Length, mm	170	170	175	175	175	170	170
Seatpost	Length, mm	300	300	350	350	350	300	300
Steerer	Length, mm	144	164	184	204	222	164	184

Comfort Series

For 2002

Gary's Comfort series bikes address an emerging segment of the bike market were a big hit in the introductory year of 2001. They are unchanged for 2002 (why mess with success?).

Geometry

The Comfort series is designed with geometry which puts you in a full 'heads up' position. The dimensions look a bit odd on paper, but there is a reason; we designed these frames from the ground up to use suspension seatposts and adjustable stems.

Ride

For the recreational cyclist, these bikes are an epiphany. Instead of focusing on race qualities like carving turns, or power uphill, the Comfort series' first feature is comfort. Some aficionados will point out that an upright position is not aero, and is therefore inefficient. We'll point out that if you are off the bike because your back hurts, aerodynamic efficiency isn't worth much. Furthermore, the Comfort series rider is not trying to beat the clock, they just want to have fun.

Riding a Comfort series bike, you will enjoy anything from a spin around the neighborhood to commuting and day tours. The comfort features, like suspension fork, sprung saddle, or seatpost are all tuned to react at low bump forces, so you don't have to be going really fast or hit big bumps to enjoy their benefits. The smooth tires make these bikes pretty fast, but the large footprint also makes them stable on dirt footpaths or Rails-to-Trails tours.

Frame details

The Comfort series uses Silver series aluminum frame technology.

Designed for suspension seatposts and adjustable stems, this frame has a unique look to it. The seat tube is short compared to other bikes because a suspension seatpost has a section which cannot be lowered into the frame. This means the normal seat height is quite a ways above the top tube. Meanwhile, this rider wants to sit upright. If a suspension seatpost were put on a 'normal' frame, the head tube would be too short to position the handlebars for a comfortable, bent-elbow position.

Comfort series bikes have 2 water bottle mounts, except the S and Ladies frames. These frame sizes do not have enough seat tube to allow a water bottle mount to be used.

Fit Information Reminder

When considering the "Rider Height" portion of the Fit information on each page, bear in mind that we made these fit estimations with the stem at its highest point. With Ahead stems, that means all the spacers were under the stem. With quill stems, the handlebars reach their maximum height with the stem pulled up to the minimum insertion line. With adjustable stems, it's calculated with the stem at a 40 degree angle, and many of these stems have very long quills. Lowering the bars, or changing the parts, or changing the stem angle, changes the fit of the bike as well as its Rider Height. Primarily, if you lower the stem, the bike will fit a smaller person. If you make the stem more upright, it will also make the bike fit a smaller person.

	Frame sizes	S	M	L	XL	M-L
	Head angle	70.5	70.5	70.5	70.5	70.5
	Seat angle	73.5	73.0	73.0	72.5	73.5
MILLIMETERS	Standover	679	716	760	810	595
	Seat tube	368	431	495	533	419
	Head tube	125	145	185	225	145
	Eff top tube	550	574	598	610	574
	Chainstays	425	425	425	425	425
	BB height	291	291	291	291	291
	Offset	38.0	38.0	38.0	38.0	38.0
	Trail	79	79	79	79	79
	Wheelbase	1029	1049	1053	1083	1049
INCHES	Standover	26.7	28.2	29.9	31.9	23.4
	Seat tube	14.5	17.0	19.5	21.0	16.5
	Head tube	4.9	5.7	7.3	8.9	5.7
	Eff top tube	21.7	22.6	23.5	24.0	22.6
	Chainstays	16.7	16.7	16.7	16.7	16.7
	BB height	11.5	11.5	11.5	11.5	11.5
	Offset	1.5	1.5	1.5	1.5	1.5
	Trail	3.1	3.1	3.1	3.1	3.1
	Wheelbase	40.5	41.3	41.5	42.6	41.3

Presidio

A popular pplace to begin your ride at the south end of San Francisco's Golden Gate bridge.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
FORK	RockShox Judy TT	
	Travel, mm	*80*
	Axle-crown length, mm	*451*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Alloy, 50mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy quick change, adj. rise, direct connect	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	SRAM DualDrive	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

RR DERAILLEUR	SRAM ESP 7.0	
CRANKSET	SRAM DualDrive, 38T, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Cartridge	
	Shell x axle, mm	*, Square*
CHAIN	KMC Z-72	
	Chain type	*3/32"*
	Chain length (links)	
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Rubber*
FRONT TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
REAR WHEEL	SRAM DualDrive hub, 32°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Velox 19mm*
REAR TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
SPOKES	15G stainless	
	Front, mm	*261, 3x*
	Rear, mm	*, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension, alloy	
	Outer diameter, mm	*27.2*
SADDLE	Oasis Webspring	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/quick release	
	Inner diameter, mm	*31.8*

ADDITIONALS ..... 2 water bottle mounts, rack mounts (1 bottle/no rack on Women's)

Why this Fisher rocks:

Rider: Bike path, commuter, or comfort rider

Frameset

Comfort geometry- special design for suspension post and adjustable stem

Silver series aluminum- light weight

Wheelset

Matrix rims- light, strong, smooth braking

Acrobat tires- smooth for speed, and wide for low-pressure comfort

Components

Sophisticated recreation level- SRAM DualDrive

Road-type gearing- easy uphills, plus you don't have to over-spin on the downhill

Suspension fork, seatpost- soft springs for comfort suspension

Attention to comfort points- user friendly pedals, wide bars for control, and comfy sprung saddle

GEARING

	38
11	91
12	83
14	71
16	62
18	55
21	47
26	38
32	31

BIKE WEIGHT

34.3 lb.
15.57 kg.

COLORS

Silver Metallic/Metallic Red • Silver/White decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	72	74	77	79
	Cm	182	187	195	200
Handlebar	Width, mm	600	600	600	600
Stem	Length, mm	125	125	125	125
	Angle	35	35	35	35
Crank	Length, mm	170	170	170	170
Seatpost	Length, mm	300	300	350	350
Steerer	Length, mm	225	245	285	325

Solstice

The longest day of the year (or shortest), as in the Summer solstice. A great day to ride!

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
FORK	SR XCR-E	
	Travel, mm	*73*
	Axle-crown length, mm	*454*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23*

CONTROLS

HANDLEBAR	Steel, 50mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy quick change, adj. rise, direct connect	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Alivio RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano T301	
	Cable routing	*Down pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore SGS	
CRANKSET	Shimano T303 48/38/28, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Cartridge	
	Shell x axle, mm	*73 x 116, Square*
CHAIN	KMC Z-72	
	Chain type	*3/32"*
	Chain length (links)	*112*
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Rubber*
FRONT TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
REAR WHEEL	Shimano Alivio hub, 32°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Velox 19mm*
REAR TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*261, 3x*
	Rear, mm	*258/259, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension, alloy	
	Outer diameter, mm	*27.2*
SADDLE	Oasis Webspring	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/quick release	
	Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts, rack mounts (1 bottle/no rack on Women's)	

Why this Fisher rocks:

Rider: Bike path, commuter, or comfort rider

Frameset

Comfort geometry- special design for suspension post and adjustable stem

Silver series aluminum- light weight

Wheelset

Matrix rims- light, strong, smooth braking

Acrobat tires- smooth for speed, and wide for low-pressure comfortt

Components

Recreation level- Nexave 300

Road-type gearing- easy up hill, don't have to over-spin on the downhill

Suspension fork, seatpost- soft springs for comfort suspension

Attention to comfort points- user friendly pedals, wide bars for control, and comfy sprung saddle

GEARING

	28	38	48
11	67	91	114
12	61	83	105
14	52	71	90
16	46	62	79
18	41	55	70
21	35	47	60
26	28	38	48
32	23	31	39

BIKE WEIGHT

34.3 lb.
15.57 kg.

COLORS

Warm Silver Metallic/Metallic Deep Blue • Silver/White decal • Warm Silver Metallic fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	72	74	77	79
	Cm	183	188	195	200
Handlebar	Width, mm	600	600	600	600
Stem	Length, mm	125	125	125	125
	Angle	35	35	35	35
Crank	Length, mm	170	170	170	170
Seatpost	Length, mm	300	300	350	350
Steerer	Length, mm	225	245	285	325

Napa

Popular bike touring area, near wineries and hot springs. For several years the location of the opening round of the mountain bike World Cup.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
FORK	SR XCC-E	
	Travel, mm	*63*
	Axle-crown length, mm	*448*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.0*

CONTROLS

HANDLEBAR	Steel, 50mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy quick change, adj. rise, direct connect	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano EF29	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano C051	
	Cable routing	*Down pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Acera	
CRANKSET	Shimano C203 48/38/28, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Cartridge	
	Shell x axle, mm	*73 x 116, Square*
CHAIN	KMC Z-72	
	Chain type	*3/32"*
	Chain length (links)	*114*
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 36°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Rubber*
FRONT TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
REAR WHEEL	Shimano RM-40 hub, 36°, Matrix 750 rim	
	E.R.D., mm	*561*
	Rim strip	*Velox 19mm*
REAR TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*259, 3x*
	Rear, mm	*256/257, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension, alloy	
	Outer diameter, mm	*27.2*
SADDLE	Oasis Webspring	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/quick release	
	Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts, rack mounts (1 bottle/no rack on Women's)	

Why this Fisher rocks:

Rider: Bike path, commuter, or comfort rider

Frameset

Comfort geometry- special design for suspension post and adjustable stem

Silver series aluminum- light weight

Wheelset

Matrix rims- light, strong, smooth braking

Acrobat tires- smooth for speed, and wide for low-pressure comfort

Components

Recreation level- Shimano C Series

Road-type gearing- easy up hill, don't have to over-spin on the downhill

Suspension fork, seatpost- soft springs for comfort suspension

Attention to comfort points- user friendly pedals, wide bars for control, and comfy sprung saddle

GEARING

	28	38	48
11	67	91	114
12	61	83	105
14	52	71	90
16	46	62	79
18	41	55	70
21	35	47	60
26	28	38	48
32	23	31	39

BIKE WEIGHT

34.3 lb.
15.57 kg.

COLORS

Silver Metallic/White Pearl • Black/Dark Silver decal • Silver Metallic fork

FIT

Frame	Size	S	M	L	XL	LS-S	LS-M
Rider height	Inches	72	74	77	79	72	74
	Cm	182	187	195	200	182	187
Handlebar	Width, mm	600	600	600	600	600	600
Stem	Length, mm	125	125	125	125	125	125
	Angle	35	35	35	35	35	35
Crank	Length, mm	170	170	170	170	170	170
Seatpost	Length, mm	300	300	350	350	300	300
Steerer	Length, mm	225	245	285	325	225	245

Capitola

Beach town just south of Santa Cruz, California.

FRAMESET

MAIN TUBES	Silver series 7005 aluminum	
STAYS	Silver series 7005 aluminum	
FORK	High tensile steel	
	Travel, mm	
	Axle-crown length, mm	*398*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*36.5*

CONTROLS

HANDLEBAR	Steel, 50mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy adjustable rise	
	Steerer clamp height, mm	
SHIFT LEVERS	Shimano EF29	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano C051	
	Cable routing	*Down pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano TY-40 GS	
CRANKSET	FCM35, alloy, 48/38/28 w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Semi-cartridge	
	Shell x axle, mm	*73 x 124.5, Square*
CHAIN	KMC Z-51	
	Chain type	*3/32"*
	Chain length (links)	*112*
CASSETTE	Sun Race 13-34, 7spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Rubber*
FRONT TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
REAR WHEEL	Alloy, QR hub, 36°, Matrix 550 rim	
	E.R.D., mm	*559*
	Rim strip	*Velox 19mm*
REAR TIRE	Hutchinson Acrobat	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*265, 3x*
	Rear, mm	*262/263, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension, alloy	
	Outer diameter, mm	*27.2*
SADDLE	Oasis Webspring	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/quick release	
	Inner diameter, mm	*31.8*
ADDITIONALS	2 water bottle mounts, rack mounts (1 bottle/no rack on Women's)	

Why this Fisher rocks:

Rider: Bike path, commuter, or comfort rider

Frameset

Comfort geometry- special design for suspension post and adjustable stem

Silver series aluminum- light weight

Wheelset

Matrix rims- light, strong, smooth braking

Acrobat tires- smooth for speed, and wide for low-pressure comfort

Components

Recreation level- Shimano C Series

Road-type gearing- easy up hill, don't have to over-spin on the downhill

Suspension seatpost- soft springs for comfort suspension

Attention to comfort points- user friendly pedals, wide bars for control, and comfy sprung saddle

GEARING

	28	38	48
13	56	77	97
15	49	66	84
17	43	59	74
19	39	52	66
22	33	45	57
26	28	38	48
34	22	29	37

BIKE WEIGHT

34.3 lb.
15.57 kg.

COLORS

Silver Metallic/Slate Blue Metallic • Black/Silver decal • Silver Metallic fork

FIT

Frame	Size	S	M	L	XL	LS-S	LS-M
Rider height	Inches	68	71	74	76	68	71
	Cm	172	180	187	192	172	180
Handlebar	Width, mm	600	600	600	600	600	600
Stem	Length, mm	110	110	110	110	110	110
	Angle	40	40	40	40	40	40
Crank	Length, mm	170	170	170	170	170	170
Seatpost	Length, mm	300	300	350	350	300	300
Steerer	Length, mm	164	184	222	264	164	184

For 2002

These frames remain unchanged from 2000.

Geometry

Most of our Hybrid frames are just that- a blend of road and mountain bike geometries. They use lightweight, large diameter 700c wheels for speed and a smooth ride. They use mountain bike angles and wheelbase dimensions for stability and a more upright position.

The Fast City has an unique geometry for this type of bike; it has a focus on performance, with other hybrid features being secondary. This is the bike for those who always thought a hybrid made sense but the ride was too docile.

Ride

Our Hybrid bikes offer stable handling and steady tracking. They smoothly glide over the ground, and are not as reactive to weight changes or bumps and other irregular terrain. This makes them ideal for all-round riding, commuting, or those just getting into cycling.

Frame details

The aluminum hybrid frames use Silver series frame technology. With this frame, somewhat oversize tubing creates a rigid structure between the bottom bracket and head tube, for pedaling efficiency. But we didn't overdo the stiffness; our Silver series hybrids are very comfortable and shock absorptive.

The Fast City, being a performance-oriented hybrid, is equipped with our premium Platinum butted ZR9000 tubeset.

Our most economical Hybrid is the Tiburon. This bike uses a hi-tensile steel frame. On this bike, we've focused on providing the best ride for the cost. By carefully designing the frame geometry, tubing wall thicknesses, and tubing diameters, we've managed to create a bike that rides like it should cost a lot more. This allows riders a viable high quality alternative to chain store bikes which don't ride nearly as well.

Hybrid bikes have 2 water bottle mounts, except the Ladies sizes. These frame sizes do not have enough seat tube to allow a water bottle mount to be used.

	Frame sizes	XS	S	M	L	XL	W-M
	Head angle	70.0	70.0	70.5	70.5	71.5	70.5
	Seat angle	74.5	74.0	74.0	73.0	73.0	74.0
MILLIMETERS	Standover	654	685	731	769	817	603
	Seat tube	330	381	445	508	572	445
	Head tube	90	90	105	105	125	125
	Eff top tube	538	544	548	565	581	547
	Chainstays	445	445	445	445	445	445
	BB height	281	281	281	281	281	281
	Offset	50.0	50.0	50.0	50.0	50.0	50.0
	Trail	74	74	70	70	64	70
	Wheelbase	1055	1056	1056	1062	1069	1056
INCHES	Standover	25.8	27.0	28.8	30.3	32.2	23.7
	Seat tube	13.0	15.0	17.5	20.0	22.5	17.5
	Head tube	3.5	3.5	4.1	4.1	4.9	4.9
	Eff top tube	21.2	21.4	21.6	22.2	22.9	21.5
	Chainstays	17.5	17.5	17.5	17.5	17.5	17.5
	BB height	11.1	11.1	11.1	11.1	11.1	11.1
	Offset	2.0	2.0	2.0	2.0	2.0	2.0
	Trail	2.9	2.9	2.8	2.8	2.5	2.8
	Wheelbase	41.6	41.6	41.6	41.8	42.1	41.6

Fast City

	Frame sizes	S	M	L	XL
	Head angle	70.5	71.0	71.5	71.5
	Seat angle	74.0	74.0	73.5	73.0
MILLIMETERS	Standover	695	729	757	799
	Seat tube	394	442	479	529
	Head tube	80	80	90	105
	Eff top tube	590	608	628	647
	Chainstays	440	440	440	440
	BB height	292	292	292	297
	Offset	42.0	42.0	42.0	42.0
	Trail	87	83	80	80
	Wheelbase	1081	1094	1103	1119
INCHES	Standover	27.3	28.7	29.8	31.5
	Seat tube	15.5	17.4	18.9	20.8
	Head tube	3.1	3.1	3.5	4.1
	Eff top tube	23.2	23.9	24.7	25.5
	Chainstays	17.3	17.3	17.3	17.3
	BB height	11.5	11.5	11.5	11.7
	Offset	1.7	1.7	1.7	1.7
	Trail	3.4	3.3	3.1	3.1
	Wheelbase	42.6	43.1	43.4	44.1

Fast City

An exciting place to be. An 80's-type expression of exclamation.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*lb (kg)*
FORK	Manitou Luxe	
	Travel, mm	*75*
	Axle-crown length, mm	*450*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Select	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX SGS	
CRANKSET	Shimano Deore 48/36/26	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN40	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Hybrid, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
REAR WHEEL	Bontrager Select Hybrid, 24°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Shimano M420, V type	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts, rack mounts, Cane Creek Ergo barends	

Why this Fisher rocks:

Rider: Performance commuter, extended urban adventure, or Fast day tourer

Frameset

Performance hybrid geometry- mountain style comfort, road style responsiveness

Platinum series ZR9000 aluminum- light weight

Wheelset

Bontrager wheelset- Engineered wheel design with optimal strength, low weight

IRC Duro-Tour tires- fast and tough

Components

Performance level- Shimano LX

Road gearing- easy up hill, don't have to over-spin on the downhill

Barends- more hand positions for comfort, extra position provides more power on the hills

GEARING

	26	36	48
11	69	95	127
12	63	87	116
14	54	75	99
16	47	65	87
18	42	58	77
21	36	50	66
24	31	44	58
28	27	37	50
32	24	33	44

BIKE WEIGHT

25.4 lb.
11.53 kg.

COLORS

Silver Metallic/Black Metallic • Silver Metallic decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	69	72	73
	Cm	170	176	183	186
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	163.2	163.2	173.2	188.2

Utopia

An ideal society. Where we would be if more people rode bikes.

FRAMESET

MAIN TUBES	Silver series aluminum	
STAYS	Silver series aluminum	
FORK	RockShox Ruby Metro XC	
	Travel, mm	*50*
	Axle-crown length, mm	*428*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Sport	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Alivio RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Nexave T301	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX SGS	
CRANKSET	Shimano Nexave T411 48/38/28	
	Bolt hole circle, mm	*79*
BB	Shimano BB-LP28	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	IG-31	
	Chain type	*3/32"*
	Chain length (links)	*112*
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET

FRONT WHEEL	Bontrager Select Hybrid, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
REAR WHEEL	Bontrager Select Hybrid, 24°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*27.2*
SADDLE	Oasis CRZ+	
BRAKES	Alloy direct pull	
PEDALS	Alloy/alloy cage w/clips and straps	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts, rack mounts	

Why this Fisher rocks:

Rider: Performance commuter, urban adventure, or Day tourer

Frameset

Hybrid geometry- mountain style comfort, road style responsiveness

Silver series aluminum- light weight

Wheelset

Bontrager wheelset- aerodynamic for speed, Bontrager design for low maintenance

Duro-Tour tires- fast, and tough

Components

Enthusiast level- LX, Nexave 400, Bontrager

Road gearing- easy up hill, don't have to over-spin on the downhill

Suspension fork- smoothens the ride

GEARING

	28	38	48
11	69	94	119
12	64	86	109
14	54	74	93
16	48	65	82
18	42	58	73
21	36	49	62
26	29	40	50
32	24	32	41

BIKE WEIGHT

27.1 lb.
12.30 kg.

COLORS

Black Metallic/Metallic Silver • Black/Dark Silver decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	67	69	71
	Cm	168	170	174	180
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	90	90	105	105
	Angle	15	15	15	15
Crank	Length, mm	170	170	170	170
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	175.2	190.2	190.2	210.2

Nirvana

Kinda like heaven. A place you'll find yourself when you ride a bike.

FRAMESET

MAIN TUBES	Silver series aluminum	
STAYS	Silver series aluminum	
	Frame weight	*lb (kg)*
FORK	Cozy ST	
	Travel, mm	*40*
	Axle-crown length, mm	*450*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Alloy quick change, adj. rise, direct connect	
	Steerer clamp height, mm	*40.0*
SHIFT LEVERS	GripShift Centera	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Nexave T303	
	Cable routing	*Top pull, (W-down)*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore SGS	
CRANKSET	Shimano Nexave 301 48/38/28, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Shimano BB-CT92	
	Shell x axle, mm	*73 x 122.5, Square*
CHAIN	HG-50	
	Chain type	*3/32"*
	Chain length (links)	*112*
CASSETTE	Shimano HG50-I 11-30, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Fairlane rim	
	E.R.D., mm	*604*
	Rim strip	*Velox 19mm*
FRONT TIRE	Bontrager Select	
	Tire size	*700 x 38c*
REAR WHEEL	Shimano Acera-X hub, 32°, Btrg Fairlane rim	
	E.R.D., mm	*604*
	Rim strip	*Velox 19mm*
REAR TIRE	Bontrager Select	
	Tire size	*700 x 38c*
SPOKES	DT 14G stainless	
	Front, mm	*296, 3x*
	Rear, mm	*294/295, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension	
	Outer diameter, mm	*27.2*
SADDLE	Oasis CRZ+	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts, rack mounts	

Why this Fisher rocks:

Rider: Performance commuter, urban adventure, or Day tourer

Frameset

Hybrid geometry- mountain style comfort, road style responsiveness

Silver series aluminum- light weight

Wheelset

Bontrager rim- light for speed, smooth braking

Invert II tires- comfortable width, and tough

Components

Enthusiast level- Deore, Nexave 300

Road gearing- easy up hill, don't have to over-spin on the downhill

GripShift- intuitive gear changes without letting go of the grips

GEARING

	28	38	48
11	69	94	119
13	59	80	101
15	51	69	87
17	45	61	77
20	38	52	65
23	33	45	57
26	29	40	50
30	25	35	44

BIKE WEIGHT

29.1 lb.
13.21 kg.

COLORS

Silver Metallic/Metallic Deep Blue • Silver/White decal • Silver Metallic fork

FIT

Frame	Size	XS	S	M	L	XL	L-M
Rider height	Inches	68	68	69	69	71	69
	Cm	172	172	174	175	181	176
Handlebar	Width, mm	620	620	620	620	620	620
Stem	Length, mm	105	105	105	105	105	105
	Angle	35	35	35	35	35	35
Crank	Length, mm	170	170	170	170	170	170
Seatpost	Length, mm	318	318	350	350	350	318
Steerer	Length, mm	189.2	189.2	204.2	204.2	224.2	224.2

Zebrano

A zebra-striped African hardwood of unusual beauty.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*lb (kg)*
FORK	Manitou Luxe	
	Travel, mm	*75*
	Axle-crown length, mm	*450*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Select	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX SGS	
CRANKSET	Shimano Deore 48/36/26	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN40	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Hybrid, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
REAR WHEEL	Bontrager Select Hybrid, 24°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Shimano M420, V type	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts, rack mounts, Cane Creek Ergo barends	

Why this Fisher rocks:

Rider: Performance commuter, urban adventure, or Day tourer

Frameset

Hybrid geometry- mountain style comfort, road style responsiveness

Silver series aluminum- durable, and light

Wheelset

Matrix rim- light for speed, smooth braking

Bontrager Select tires- comfortable width, and tough

Components

Recreation level- Shimano C Series

Road gearing- easy up hill, don't have to over-spin on the downhill

Riser bars and adjustable stem- comfort

GEARING

	26	36	48
11	69	95	127
12	63	87	116
14	54	75	99
16	47	65	87
18	42	58	77
21	36	50	66
24	31	44	58
28	27	37	50
32	24	33	44

BIKE WEIGHT

25.4 lb.
11.53 kg.

COLORS

Silver Metallic/Black Metallic • Silver Metallic decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	69	72	73
	Cm	170	176	183	186
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	163.2	163.2	173.2	188.2

Tiburon

A town on the San Francisco bay in Marin County, California. Spanish for shark.

FRAMESET

MAIN TUBES	Platinum series butted ZR9000	
STAYS	Platinum series aluminum	
	Frame weight	*lb (kg)*
FORK	Manitou Luxe	
	Travel, mm	*75*
	Axle-crown length, mm	*450*
HEADSET	STR Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*23.2*

CONTROLS

HANDLEBAR	Bontrager Select	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore LX	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX SGS	
CRANKSET	Shimano Deore 48/36/26	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-UN40	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Hybrid, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
REAR WHEEL	Bontrager Select Hybrid, 24°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Duro Tour	
	Tire size	*700 x 35c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Shimano M420, V type	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mounts, rack mounts, Cane Creek Ergo barends	

Why this Fisher rocks:

Rider: Performance commuter, urban adventure, or Day tourer

Frameset

Hybrid geometry- mountain style comfort, road style responsiveness

Silver series aluminum- durable, and light

Wheelset

Matrix rim- light for speed, smooth braking

Bontrager Select tires- comfortable width, and tough

Components

Recreation level- Shimano C Series

Road gearing- easy up hill, don't have to over-spin on the downhill

Riser bars and adjustable stem- comfort

GEARING

	26	36	48
11	69	95	127
12	63	87	116
14	54	75	99
16	47	65	87
18	42	58	77
21	36	50	66
24	31	44	58
28	27	37	50
32	24	33	44

BIKE WEIGHT

25.4 lb.
11.53 kg.

COLORS

Silver Metallic/Black Metallic • Silver Metallic decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	69	72	73
	Cm	170	176	183	186
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	5	5	10	10
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	163.2	163.2	173.2	188.2

For 2002

These Fishers will fit both smaller adults and kids. They have been very well accepted because they ride great, and remain unchanged for 2002.

Geometry

These frames use a geometry which delivers performance for a smaller rider. The head angles are slightly slackened to allow good off-road stability for a rider with less upper body strength. Standover is maximized to allow a rider to get on early, and ride it for a longer period of time as they grow.

Ride

These are real mountain bikes, and that's how they ride. This is important, because although we show them in the Kids section in the catalog, they have the ride performance and handling required to be enjoyed by smaller adults.

Frame details

These bikes use hi-tensile steel, and with a Cro-Moly seat tube on the hardtails. The advantage of Cro-Moly steel is higher tensile strength and fatigue resistance; it's no more rigid than good hi-tensile steel. For this reason, we've only used Cro-Moly in the seat tube, which can see lots of flexing as the seatpost quick release is used. For the rest of the bike, we've focused on providing the best ride for the cost. By carefully designing the frame geometry, tubing wall thicknesses, and tubing diameters, we've managed to get a lot of ride from a less expensive frame material. This allows riders a viable high quality alternative to chain store bikes which don't ride nearly as well.

Bike Fit

Once again, we remind you that the fit information is for an average rider with the handlebars adjusted to their highest possible position. The rider fitting this bike may be several inches taller than our recommendations due to personal preference of other factors which we can't readily predict. But we do, in fact, expect that a smaller rider would also fit a given bike simply by lowering the handlebars.

Mt. Jam FS

	Frame sizes	S
	Head angle	70.0
	Seat angle	71.5
MILLIMETERS		
	Standover	
	Seat tube	380
	Head tube	100
	Eff top tube	529
	Chainstays	400
	BB height	306
	Offset	45.0
	Trail	62
	Wheelbase	993
	Standover	
	Seat tube	15.0
	Head tube	3.9
INCHES	Eff top tube	20.8
	Chainstays	15.7
	BB height	12.0
	Offset	1.8
	Trail	2.5
	Wheelbase	39.1

Hardtails

	Frame sizes	13B	13G
	Head angle	70.0	70.0
	Seat angle	72.0	72.0
MILLIMETERS			
	Standover	606	550
	Seat tube	335	335
	Head tube	90	90
	Eff top tube	524	524
	Chainstays	405	405
	BB height	272	272
	Offset	45.0	45.0
	Trail	62	62
	Wheelbase	983	983
	Standover	23.9	21.7
	Seat tube	13.2	13.2
	Head tube	3.5	3.5
INCHES	Eff top tube	20.6	20.6
	Chainstays	15.9	15.9
	BB height	10.7	10.7
	Offset	1.8	1.8
	Trail	2.5	2.5
	Wheelbase	38.7	38.7

Mt. Jam FS

FRAMESET

MAIN TUBES	Hi Tensile steel
STAYS	Hi Tensile steel
Frame weight	*8.8 lb (4.01 kg)*
FORK	SYNC 288B
Travel, mm	*63*
Axle-crown length, mm	*410*
REAR SHOCK	Aintec AB-7000
Stroke	*30mm*
Length	*125mm*
Width	*24mm*
Eyes	*6mm*
HEADSET	Sealed
Size	*25.4/34.0/30.0*
Stack height, mm	*36.5*

CONTROLS

HANDLEBAR	Steel, 5° bend, 40mm rise
Clamp diameter, mm	*25.4*
STEM	Steel ATB
Steerer clamp height, mm	
SHIFT LEVERS	SR 225
BRAKE LEVERS	CS VL-313D
GRIPS	Kraton

DRIVETRAIN

FT DERAILLEUR	Shimano Altus
Cable routing	*Down pull*
Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano TY-30 GS
CRANKSET	SR XR17G 42/34/24
Bolt hole circle, mm	*Riveted*
BB	VP-B33W
Shell x axle, mm	*68 x 122.5, Square*
CHAIN	KMC Z-51
Chain type	*3/32"*
Chain length (links)	*102*
CASSETTE	HG72 13-28, 7spd

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 32°, Weinmann 519 rim
E.R.D., mm	*499*
Rim strip	*Rubber*
FRONT TIRE	Bontrager Revolt ST-2
Tire size	*24 x 2.1*
REAR WHEEL	Alloy, nutted hub, 32°, Weinmann 519 alloy rim
E.R.D., mm	*499*
Rim strip	*Rubber*
REAR TIRE	Bontrager Revolt ST-2
Tire size	*24 x 1.95*
SPOKES	14G UCP
Front, mm	*242, 4x*
Rear, mm	*240/241, 4x*
INNER TUBES	Schraeder valve

OTHER

SEATPOST	Alloy micro-adjust
Outer diameter, mm	*27.2*
SADDLE	Fisher Padded
BRAKES	Alloy direct pull
PEDALS	Platform
Axle diameter	*9/16"*
SEAT BINDER	Quick release
Inner diameter, mm	
ADDITIONALS	1 water bottle mount

Why this Fisher rocks:

Rider: Aggressive youth or smaller adult single-track rider

Frameset

Joshua suspension- all-round performance

URT design- no suspension activation through chain tension

Wheelset

Alloy rims- light, good braking action

Bontrager tires- name brand known for easy pedaling, traction

Components

Youth enthusiast level- Altus, SYNC suspension fork

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

GEARING

	24	34	42
13	44	62	76
15	38	54	66
17	33	47	58
19	30	42	52
22	26	37	45
25	23	32	40
28	20	29	35

BIKE WEIGHT

34.3 lb.
15.57 kg.

COLORS

FIT

Frame	Size	S
Rider height	Inches	58
	Cm	147
Handlebar	Width, mm	560
Stem	Length, mm	50
	Angle	15
Crank	Length, mm	162
Seatpost	Length, mm	300
Steerer	Length, mm	138

Mt. Jam

FRAMESET

MAIN TUBES	Hi Tensile steel w/CroMoly seat tube	
STAYS	Hi Tensile steel	
	Frame weight	*6.8 lb (3.10 kg)*
FORK	RST	
	Travel, mm	*60*
	Axle-crown length, mm	*410*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel	
	Clamp diameter, mm	*25.4*
STEM	Quick change, quill	
	Steerer clamp height, mm	
SHIFT LEVERS	SRAM Centera	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Kraton	

DRIVETRAIN

FT DERAILLEUR	Shimano Altus	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Tourney TY40	
CRANKSET	SunRace TK-1, 42/34/24	
	Bolt hole circle, mm	*Riveted*
BB	Three-piece type	
	Shell x axle, mm	*70 x 3L, Square*
CHAIN	KMC Z-51	
	Chain type	*3/32"*
	Chain length (links)	*104*
CASSETTE	HG72 13-28, 7spd	

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim	
	E.R.D., mm	*499*
	Rim strip	*Rubber*
FRONT TIRE	Innova MTB	
	Tire size	*24 x 2.1*
REAR WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim	
	E.R.D., mm	*499*
	Rim strip	*Rubber*
REAR TIRE	Innova MTB	
	Tire size	*24 x 2.1*
SPOKES	14G UCP	
	Front, mm	*242, 4x*
	Rear, mm	*240/241, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*30.4*
SADDLE	Fisher Padded	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release	
	Inner diameter, mm	*31.8*
ADDITIONALS	1 water bottle mount, chainguard, kickstand	

Why this Fisher rocks:

Rider: Aggressive youth or smaller adult single-track rider

Frameset

Steel- strong and durable

Off-road geometry- stable in rough terrain

Wheelset

Alloy rims- light, good braking action

Bontrager tires- name brand known for easy pedaling, traction

Nutted hubs- secure wheel attachment for new rider

Components

Youth enthusiast level- Altus, wide-ratio gearing

Suspension fork- smoothens the bumps, adds control

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

GEARING

	24	34	42
13	44	62	76
15	38	54	66
17	33	47	58
19	30	42	52
22	26	37	45
25	23	32	40
28	20	29	35

BIKE WEIGHT

29.7 lb.
13.48 kg.

COLORS

Blue/Yellow

FIT

Frame	Size	13
Rider height	Inches	61
	Cm	156
Handlebar	Width, mm	560
Stem	Length, mm	70
	Angle	40
Crank	Length, mm	162
Seatpost	Length, mm	250
Steerer	Length, mm	126

Tyro

FRAMESET

MAIN TUBES	Hi Tensile steel w/CroMoly seat tube	
STAYS	Hi Tensile steel	
	Frame weight	*6.8 lb (3.10 kg)*
FORK	Hi Tensile steel	
	Travel, mm	
	Axle-crown length, mm	*361*
HEADSET	Steel	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel	
	Clamp diameter, mm	*25.4*
STEM	Quick change, quill	
	Steerer clamp height, mm	
SHIFT LEVERS	SRAM Centera	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Kraton	

DRIVETRAIN

FT DERAILLEUR	Shimano Altus	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Tourney TY40	
CRANKSET	SunRace TK-1, 42/34/24	
	Bolt hole circle, mm	*Riveted*
BB	Three-piece type	
	Shell x axle, mm	*68 x 122, Square*
CHAIN	KMC Z-51	
	Chain type	*3/32"*
	Chain length (links)	*102*
CASSETTE	HG72 13-28, 7spd	

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim	
	E.R.D., mm	*499*
	Rim strip	*Rubber*
FRONT TIRE	Innova MTB	
	Tire size	*24 x 2.1*
REAR WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim	
	E.R.D., mm	*499*
	Rim strip	*Rubber*
REAR TIRE	Innova MTB	
	Tire size	*24 x 2.1*
SPOKES	14G UCP	
	Front, mm	*242, 4x*
	Rear, mm	*240/241, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy	
	Outer diameter, mm	*27.2*
SADDLE	Fisher Padded	
BRAKES	Alloy direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release	
	Inner diameter, mm	
ADDITIONALS	1 water bottle mount, chainring guard, kickstand	

Why this Fisher rocks:

Rider: Youth or smaller adult doubletrack rider

Frameset

Steel- strong and durable

Off-road geometry- stable in rough terrain

Wheelset

Alloy rims- light, good braking action

Bontrager tires- name brand known for easy pedaling, traction

Nutted hubs- secure wheel attachment for new rider

Components

Youth enthusiast level- Altus, wide-ratio gearing

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

GEARING

	24	34	42
13	44	62	76
15	38	54	66
17	33	47	58
19	30	42	52
22	26	37	45
25	23	32	40
28	20	29	35

BIKE WEIGHT

31.9 lb.
14.48 kg.

COLORS

Silver/Black (boys)
Purple/Blue (girls)

FIT

Frame	Size	13B	13G
Rider height	Inches	59	59
	Cm	149	149
Handlebar	Width, mm	560	560
Stem	Length, mm	50	50
	Angle	15	15
Crank	Length, mm	162	162
Seatpost	Length, mm	250	250
Steerer	Length, mm	126	126

BMX

For 2002

These successful frames remain unchanged from 2000.

Geometry

Our BMX bikes are designed to satisfy both kids and their parents. By carefully designing the frame and components, we make the bikes easier for kids to get on and ride. At the same time, we provide competition level performance that's tested by our Fisher BMX Pro team.

Frame details

BMX riding and performance is all about durability. Check out the hefty dropouts and grind plates on our bikes. Look at the massive welds joining the tubes. Notice the strategically placed gussets. What you can't see is the carefully selected tubing wall thicknesses, and the almost endless testing that's required before a Fisher BMX bike hits the market.

Our Jumping bikes are all built from rugged steel. These bikes are beefy. Look at the super heavy-duty head tube. This is to resist headset stretch, a major problem when the bikes suddenly aren't airborne anymore. Both the top tube and down tube intersect the head tube, making for the strongest possible frame. At the other end of the bike, we've increased the diameter of the stays to add strength for rear first landings.

Our Racing frames are aluminum for lower weight, but we still built them beefy for competition. The down tubes are slightly smaller in diameter to allow a slight flex for excellent handling on the berms, but they're still stiff enough to land smoothly after jumping a double.

Our freestyle bikes feature long top tubes, with short rear ends. This design provides great balance for those radical tricks. They're also heavily built, with thick tubes and extra gussets.

Cab

FRAMESET

MAIN TUBES	HiTensile w/ Cro-Moly top and down tube	
STAYS	High tensile steel	
FORK	Fisher Dirt, 1 3/8" tapered Cro-Moly blades	
	Travel, mm	
	Axle-crown length, mm	*322.0*
HEADSET	Tioga threadless	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*25.5*

CONTROLS

HANDLEBAR	Fisher	
	Clamp diameter, mm	*22.2*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	*31.8*
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Bontrager BMX	

DRIVETRAIN

CRANKSET	Fisher forged	
	Bolt hole circle, mm	*110*
BB	One-piece type	
	Shell x axle, mm	*24 TPI,*
CHAIN	KMC	
	Chain type	*1/8"*
	Chain length (links)	*90*
CASSETTE	ACS Claw, 16T	

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 48°, 3/8 axle, Al alloy rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
FRONT TIRE	Knobby, square style	
	Tire size	*20 x 2.1*
REAR WHEEL	Alloy, nutted hub, 48°, 3/8 axle, Al alloy rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
REAR TIRE	Knobby, square style	
	Tire size	*20 x 2.1*
SPOKES	14G UCP	
	Front, mm	*185, 4x*
	Rear, mm	*183/183, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*25.4*
SADDLE	Bontrager FS10 BMX	
BRAKES	Alloy direct pull	
PEDALS	Alloy platform	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*
ADDITIONALS	SST Oryg rotor, Fisher pegs (1 pr.)	

Why this Fisher rocks:

Rider: Aggressive BMX rider or Racer

Frameset

- Cro-Moly steel- strong and durable
- Massive tubes- stiff for jumping, slight flex for berm shots

Wheelset

- Alloy rims w/48 spokes- light, but tough
- 14mm axles- super strong

Components

- Name brand parts- quality and durability
- Cro-Moly and alloy parts- high strength, low weight

GEARING

	44
16	55

COLORS

Green

FIT

Frame	Size	Pro
Rider height	Inches	54
	Cm	136
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	350
Steerer	Length, mm	160

Mullet

FRAMESET

MAIN TUBES	Cro-Moly steel	
STAYS	Cro-Moly steel	
FORK	Fisher Dirt, 1 3/8" tapered Cro-Moly	
	Travel, mm	
	Axle-crown length, mm	*322.0*
HEADSET	Tioga threadless	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*25.5*

CONTROLS

HANDLEBAR	Fisher Cro-Moly	
	Clamp diameter, mm	*22.2*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	*31.8*
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Bontrager BMX	

DRIVETRAIN

CRANKSET	Fisher forged Cro-Moly	
	Bolt hole circle, mm	*110*
BB	One-piece type	
	Shell x axle, mm	*24 TPI,*
CHAIN	KMC	
	Chain type	*1/8"*
	Chain length (links)	*90*
CASSETTE	ACS Claw, 16T	

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 48°, Aluminum alloy rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
FRONT TIRE	Maxxis Holy Roller	
	Tire size	*20 x 2.1*
REAR WHEEL	Alloy, nutted hub, 48°, Aluminum alloy rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
REAR TIRE	Maxxis Holy Roller	
	Tire size	*20 x 1.95*
SPOKES	14G UCP	
	Front, mm	*185, 4x*
	Rear, mm	*183/183, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*25.4*
SADDLE	Fisher Dirt Jumper	
BRAKES	Alloy direct pull	
PEDALS	Alloy platform	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*
ADDITIONALS	SST Oryg rotor	

Why this Fisher rocks:

Rider: Aggressive BMX rider or Racer

Frameset

Cro-Moly steel- strong and durable

Massive tubes- stiff for jumping, slight flex for berm shots

Wheelset

Bontrager Bruiser rims w/48 spokes- light, but tough

14mm axles- super strong

Components

Name brand parts- quality and durability

Cro-Moly and alloy parts- high strength, low weight

GEARING

	44
16	55

COLORS

Black

FIT

Frame	Size	Pro XL
Rider height	Inches	54
	Cm	137
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	350
Steerer	Length, mm	160

Woody

FRAMESET

MAIN TUBES	Hi Tensile steel	
STAYS	High tensile steel	
FORK	Fisher Freestyle, 1 3/8" tapered	
	Travel, mm	
	Axle-crown length, mm	*322.0*
HEADSET	Tioga threadless	
	Size	*21.2/32.5/26.4*
	Stack height, mm	*40.5*

CONTROLS

HANDLEBAR	Fisher	
	Clamp diameter, mm	*22.2*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Bontrager dual density	

DRIVETRAIN

CRANKSET	Fisher forged	
	Bolt hole circle, mm	*1 piece*
BB	One-piece type	
	Shell x axle, mm	*24 TPI,*
CHAIN	KMC	
	Chain type	*1/8"*
	Chain length (links)	*88*
CASSETTE	ACS Claw, 16T	

WHEELSET

FRONT WHEEL	Steel hub, 48º, Aluminum alloy rim	
	E.R.D., mm	*422*
	Rim strip	*PVC*
FRONT TIRE	Fisher Freestyle	
	Tire size	*20 x 2.0*
REAR WHEEL	Steel hub, 48º, Aluminum alloy rim	
	E.R.D., mm	*422*
	Rim strip	*PVC*
REAR TIRE	Fisher Freestyle	
	Tire size	*20 x 2.0*
SPOKES	14G UCP	
	Front, mm	*185, 4x*
	Rear, mm	*184/184, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*25.4*
SADDLE	Fisher Freestyle, padded	
BRAKES	Alloy direct pull	
PEDALS	Alloy platform	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*
ADDITIONALS	SST Oryg rotor, Fisher pegs (2 pr.)	

Why this Fisher rocks:

Rider: BMX racer

Frameset

Heavy duty steel- strong for radical moves

Full freestyle features- grinders, massive dropouts for pegs

Wheelset

Alloy rims, 48 spokes- super tough, good stopping

Components

Freestyle parts- rotor and pegs

Steel parts- durability

GEARING

	44
16	55

COLORS

Green

Black

FIT

Frame	Size	All Around
Rider height	Inches	59
	Cm	151
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	175
Seatpost	Length, mm	350
Steerer	Length, mm	174

Mr. Skinner

FRAMESET

MAIN TUBES	Hi Tensile steel	
STAYS	Hi Tensile steel	
FORK	Fisher Dirt, 1 3/8" tapered	
	Travel, mm	
	Axle-crown length, mm	*322.0*
HEADSET	Tioga threadless	
	Size	*21.2/32.5/26.4*
	Stack height, mm	*40.5*

CONTROLS

HANDLEBAR	Fisher	
	Clamp diameter, mm	*22.2*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	
SHIFT LEVERS		
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Bontrager BMX	

DRIVETRAIN

CRANKSET	Fisher forged	
	Bolt hole circle, mm	*110*
BB	One-piece type	
	Shell x axle, mm	*24 TPI,*
CHAIN	KMC	
	Chain type	*1/8"*
	Chain length (links)	*90*
CASSETTE	ACS Claw, 16T	

WHEELSET

FRONT WHEEL	Steel hub, 36º, 3/8 axle, Bontrager Bruiser rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
FRONT TIRE	Knobby, square style	
	Tire size	*20 x 1.95*
REAR WHEEL	Steel hub, 36º, 3/8 axle, Bontrager Bruiser rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
REAR TIRE	Knobby, square style	
	Tire size	*20 x 1.95*
SPOKES	14G UCP	
	Front, mm	*186, 4x*
	Rear, mm	*183/183, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*25.4*
SADDLE	Bontrager FS10 BMX	
BRAKES	Alloy direct pull	
PEDALS	Alloy platform	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*
ADDITIONALS	SST Oryg rotor, Fisher pegs (1 pr.)	

Why this Fisher rocks:

Rider: BMX racer

Frameset

Cro-Moly steel- extra strong for radical moves

Full freestyle features- grinders, massive dropouts for pegs

Wheelset

Bontrager rims- super tough, smooth stopping

Components

Steel parts- durability

Direct pull brakes- extra stopping power

GEARING

	44
16	55

COLORS

Dark blue

Yellow

FIT

Frame	Size	Pro
Rider height	Inches	54
	Cm	138
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	175
Seatpost	Length, mm	350
Steerer	Length, mm	174

Kids'

For 2002

These successful frames remain unchanged from 2000.

Geometry

Our Kids' bikes are designed to satisfy both kids and their parents. By carefully designing the frame and components, we make the bikes easier for kids to get on and ride. At the same time, we make the bikes provide a wide range of fit so kids can get on a model early, and enjoy it longer as they grow.

Ride

Within the normal limits of parts availability, we've looked at keeping the pedals close together. We use size specific crank lengths, bar widths, and saddle sizing. We keep the bottom brackets as low as possible for easy on and off, as well as a low center of gravity. When we spec a hand brake, we also make sure that fits. With our attention to these details, Fisher kids bikes are easier to learn on, and more fun to ride.

Frame details

Our frame details will likely be lost on the kids. But the parents will be concerned with durability and cost.

These bikes aren't really about a technical dissertation, so we don't even include frame geometry here. The important difference here is that our Kids' bikes go through the full Fisher testing regimen. Passing this rigorous evaluation means they're designed and built to last.

For the rest of the bike, we've focused on providing the best ride for the cost. By carefully designing the frame geometry and tubing, and carefully selecting the components, we've managed to get a lot of ride from a bike that will still pass our testing requirements. This allows riders a viable high quality alternative to chain store bikes which don't ride or last nearly as well. These are bikes that can be handed down from kid to kid as a family grows, and which will promote cycling because they make riding more fun.

Extra attention to specs on kids' bikes.

To an experienced cyclist, many of the details of our Kids' bikes may seem humdrum or at best 'normal'. There-in lies a key to our Fisher kids' bikes; they use parts you'd expect on other Fisher bikes. While other brands may use plastic bushings, we use real, round steel ball bearings because the parts will run smoother and last longer. Even on our 12" wheeled models. On bikes where we spec training wheels, they are massively overbuilt, because we know your toddler is depending on them. We use 4 bolt stems, for extra handlebar security (parents, just how often do you thoroughly check your kids' bikes?). Our saddles use adjustable seatpost clamps, offering both fore/aft adjustment and tilt. Just like on an adult bike, this allows proper positioning and comfort for your child. Many of our competitors forego these simple details to cut costs. We go the extra mile and specify size specific cranks, handlebars, pedals, and even saddles. For bikes with hand brakes, we've found better fitting levers, so your child can comfortably apply all the stopping power they need. All this attention costs a bit more, but we think your child will be more comfortable, safer, and learn faster on a Fisher bike.

Cosmo

FRAMESET

MAIN TUBES	Hi Tensile steel
STAYS	Hi Tensile steel
Frame weight	*4.0 lb (1.80 kg)*
FORK	RST
Travel, mm	*60*
Axle-crown length, mm	*352*
HEADSET	Steel
Size	*25.4/34.0/30.0*
Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel
Clamp diameter, mm	*25.4*
STEM	Quick change, quill
Steerer clamp height, mm	
SHIFT LEVERS	SRAM MRX, right only
BRAKE LEVERS	Alloy, direct pull
GRIPS	Kraton

DRIVETRAIN

RR DERAILLEUR	Shimano Tourney TY22
CRANKSET	One-piece type
Bolt hole circle, mm	*Riveted*
BB	One-piece type
Shell x axle, mm	*68,*
CHAIN	KMC Z-51
Chain type	*3/32"*
Chain length (links)	*100*
CASSETTE	HG60 14-28, 6spd

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim
E.R.D., mm	*395*
Rim strip	*PVC*
FRONT TIRE	Innova MTB
Tire size	*20 x 2.1*
REAR WHEEL	Alloy, nutted hub, 32°, Aluminum alloy rim
E.R.D., mm	*395*
Rim strip	*PVC*
REAR TIRE	Innova MTB
Tire size	*20 x 2.1*
SPOKES	14G UCP
Front, mm	*192, 3x*
Rear, mm	*189/191, 3x*
INNER TUBES	Schraeder valve

OTHER

SEATPOST	Alloy
Outer diameter, mm	*27.2*
SADDLE	Fisher Padded
BRAKES	Alloy direct pull
PEDALS	Platform
Axle diameter	*9/16"*
SEAT BINDER	Quick release, 47mm
Inner diameter, mm	
ADDITIONALS	Double chainring guards, kickstand

Why this Fisher rocks:

Rider: Young off roader or First geared bike

Frameset

- Steel- strong and tough
- Low standover- fits wider range for longer use

Wheelset

- Alloy rims- light, good stopping
- Bontrager tires- easy pedaling and fast, yet grippy

Components

- Shimano derailleur- easy shifting and pedaling
- Suspension fork- comfort and control
- Size specific fit parts- more comfortable, easier to control

GEARING

	38
14	55
16	48
18	42
21	36
24	32
28	27

BIKE WEIGHT

26.0 lb.
11.80 kg.

COLORS

Silver/Black (boys)
Purple/Dark Purple (girls)

FIT

Frame	Size	12B	12G
Rider height	Inches	53	53
	Cm	134	134
Handlebar	Width, mm	580	580
Stem	Length, mm	40	40
	Angle	15	15
Crank	Length, mm	140	140
Seatpost	Length, mm	250	250
Steerer	Length, mm	123	123

Comet

FRAMESET

MAIN TUBES	Hi Tensile steel
STAYS	Hi Tensile steel
Frame weight	*4.0 lb (1.80 kg)*
FORK	Hi Tensile steel
Travel, mm	
Axle-crown length, mm	*284*
HEADSET	Steel
Size	*22.2/30.0/27.0*
Stack height, mm	*35.0*

CONTROLS

HANDLEBAR	Steel BMX
Clamp diameter, mm	*25.4*
STEM	4 bolt BMX
Steerer clamp height, mm	
BRAKE LEVERS	Alloy, right only
GRIPS	Fisher Star

DRIVETRAIN

CRANKSET	One-piece type, 36T
Bolt hole circle, mm	*1 piece*
BB	VP-B33W
Shell x axle, mm	*68,*
CHAIN	KMC 410
Chain type	*1/8"*
Chain length (links)	*86*
CASSETTE	19

WHEELSET

FRONT WHEEL	Steel hub, 36º, Aluminum alloy rim
E.R.D., mm	*422*
Rim strip	*PVC*
FRONT TIRE	Fisher Star
Tire size	*20 x 2.0*
REAR WHEEL	Coaster brake hub, 36º, Aluminum alloy rim
E.R.D., mm	*422*
Rim strip	*PVC*
REAR TIRE	Fisher Star
Tire size	*20 x 2.0*
SPOKES	14G UCP
Front, mm	*189, 3x*
Rear, mm	*185, 3x*
INNER TUBES	Schraeder valve

OTHER

SEATPOST	Alloy micro-adjust
Outer diameter, mm	*27.2*
SADDLE	Padded
BRAKES	Coaster type
PEDALS	Platform
Axle diameter	*9/16"*
SEAT BINDER	Quick release, 47mm
Inner diameter, mm	
ADDITIONALS	Chainguard

Why this Fisher rocks:

Rider: Developing new rider

Frameset

Steel- strong and tough

Low standover- fits wider range for longer use

Wheelset

Bontrager tires- brand-name performance in a kids' size

Components

Coaster brake with rear hand brake- stepping stone to hand controls on 'big' bikes

Size specific fit parts- more comfortable, easier to control

GEARING

	36
19	38

BIKE WEIGHT

26.0 lb.
11.80 kg.

COLORS

Red/Black (boys)
White/Pink (girls)

FIT

Frame	Size	12B	12G
Rider height	Inches	48	48
	Cm	121	121
Handlebar	Width, mm	550	550
Stem	Length, mm	50	50
	Angle	0	0
Crank	Length, mm	140	140
Seatpost	Length, mm	255	255
Steerer	Length, mm	123	123

Gamma Ray

FRAMESET

MAIN TUBES	Hi Tensile steel	
STAYS	Hi Tensile steel	
FORK	Hi Tensile steel	
	Travel, mm	
	Axle-crown length, mm	*234*
HEADSET	Steel	
	Size	*22.2/30.0/27.0*
	Stack height, mm	*35.0*

CONTROLS

HANDLEBAR	Steel BMX, 130mm rise	
	Clamp diameter, mm	*22.2*
STEM	4 bolt BMX, alloy top	
	Steerer clamp height, mm	
GRIPS	Fisher Star	

DRIVETRAIN

CRANKSET	One-piece type, 32T	
	Bolt hole circle, mm	*1 piece*
BB	One-piece type	
	Shell x axle, mm	*,*
CHAIN	KMC 410	
	Chain type	*1/8"*
	Chain length (links)	*74*
CASSETTE	19	

WHEELSET

FRONT WHEEL	Steel hub, 28º, Steel rim	
	E.R.D., mm	*321*
	Rim strip	*PVC*
FRONT TIRE	Fisher Star	
	Tire size	*16 x 2.125*
REAR WHEEL	Coaster brake hub, 28º, Steel rim	
	E.R.D., mm	*321*
	Rim strip	*PVC*
REAR TIRE	Fisher Star	
	Tire size	*16 x 2.125*
SPOKES	14G UCP	
	Front, mm	*138, 3x*
	Rear, mm	*133, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*22.2*
SADDLE	Fisher Padded	
BRAKES	Coaster type	
PEDALS	Platform	
	Axle diameter	*1/2"*
SEAT BINDER	Bolt	
	Inner diameter, mm	
ADDITIONALS	Training wheels, chainguard, fenders	

Why this Fisher rocks:

Rider: First timer or Developing new rider

Frameset

Steel- strong and tough

Low standover- fits wider range for longer use

Wheelset

Comp III type tires- popular BMX styling

Components

Coaster brake with rear hand brake- stepping stone to hand controls on 'big' bikes

Size specific fit parts- more comfortable, easier to control

GEARING

	32
19	26

COLORS

Blue (boys)

Purple (girls)

FIT

Frame	Size	9B	9G
Rider height	Inches	47	47
	Cm	120	120
Handlebar	Width, mm	510	510
Stem	Length, mm	50	50
	Angle	0	0
Crank	Length, mm	114	114
Seatpost	Length, mm	300	300
Steerer	Length, mm	128	128

Sun Spot

FRAMESET

MAIN TUBES	Hi Tensile steel	
STAYS	Hi Tensile steel	
FORK	Hi Tensile steel	
	Travel, mm	
	Axle-crown length, mm	*185*
HEADSET	Steel	
	Size	*22.2/30.0/27.0*
	Stack height, mm	*35.0*

CONTROLS

HANDLEBAR	BMX	
	Clamp diameter, mm	*22.2*
STEM	4 bolt BMX	
	Steerer clamp height, mm	
GRIPS	Fisher Space	

DRIVETRAIN

CRANKSET	One-piece type, 24T	
	Bolt hole circle, mm	*1 piece*
BB	One-piece type	
	Shell x axle, mm	*24 TPI,*
CHAIN	KMC 410	
	Chain type	*1/8"*
	Chain length (links)	*60*
CASSETTE	19	

WHEELSET

FRONT WHEEL	Steel hub, 20º, Steel rim	
	E.R.D., mm	*220*
	Rim strip	*PVC*
FRONT TIRE	Fisher Space	
	Tire size	*12 x 2.5*
REAR WHEEL	Coaster brake hub, 20º, Steel rim	
	E.R.D., mm	*220*
	Rim strip	*PVC*
REAR TIRE	Fisher Space	
	Tire size	*12 x 2.5*
SPOKES	14G UCP	
	Front, mm	*75, 3x*
	Rear, mm	*86, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*22.2*
SADDLE	Padded	
BRAKES	Coaster type	
PEDALS	Platform	
	Axle diameter	*1/2"*
SEAT BINDER	Bolt, M6 x 30	
	Inner diameter, mm	
ADDITIONALS	Training wheels, chainguard, fenders, and pads	

Why this Fisher rocks:

Rider: First timer or Developing new rider

Frameset

Steel- strong and tough

Low standover- fits wider range for longer use

Wheelset

Fisher Paw tires- easy pedaling, popular animal motif

Components

Coaster brake- use strong leg muscles to control speed

Size specific fit parts- more comfortable, easier to control

GEARING

	24
19	15

COLORS

Red (boys)
Pink (girls)

FIT

Frame	Size	8	8G
Rider height	Inches	42	42
	Cm	107	107
Handlebar	Width, mm	480	480
Stem	Length, mm	50	50
	Angle	0	0
Crank	Length, mm	89	89
Seatpost	Length, mm	250	250
Steerer	Length, mm	123	123

For 2002

The LeMond titanium frames remain unchanged from their introduction in 2001.

Geometry

The titanium LeMond models use Greg's proven geometry, like all LeMond models. These bikes ride really, really well, so we've used the same geometry centerlines for all of them.

Ride

We did a lot of research and development to tune the ride of this bike. The result is an amazing ride, unlike any other Titanium bike on the market.

Its quick to accelerate, and feels lively underneath you like the best of the competitors.

But this LeMond is firm to the pedal when standing on a climb, not whippy like some Ti bikes.

And even though its sprints great, its amazingly comfortable, not harsh in the saddle like other Ti bikes can be.

Compared to our own bikes, the Ti frame offers similar drivetrain efficiency to our Aeroluminum, and its very near our lightest. This makes it a great sprinting and climbing bike. At the same time, this Ti bikes offers the liveliness and comfort of our 853 frame. Basically, the LeMond titanium models combine the best of both worlds.

	Frame sizes	49	51	53	55	57	59	61
	Head angle	72.0	72.5	73.0	73.5	73.5	74.0	74.0
	Seat angle	74.0	73.8	73.3	73.0	72.5	72.5	72.0
MILLIMETERS	Standover	752	754	772	790	808	831	848
	Seat tube	517	537	557	576	596	616	636
	Head tube	102	117	134	151	169	191	209
	Eff top tube	519	532	545	565	576	591	606
	Chainstays	412	415	415	415	415	417	417
	BB height	266	266	266	266	266	270	270
	Offset	47	47	47	45	45	43	43
	Trail	61	58	55	54	54	53	53
	Wheelbase	967	980	984	995	1000	1013	1021
INCHES	Standover	29.6	29.7	30.4	31.1	31.8	32.7	33.4
	Seat tube	20.3	21.1	21.9	22.7	23.5	24.3	25.0
	Head tube	4.0	4.6	5.3	5.9	6.7	7.5	8.2
	Eff top tube	20.4	20.9	21.5	22.3	22.7	23.3	23.9
	Chainstays	16.2	16.3	16.3	16.3	16.3	16.4	16.4
	BB height	10.5	10.5	10.5	10.5	10.5	10.6	10.6
	Offset	1.9	1.9	1.9	1.8	1.8	1.7	1.7
	Trail	2.4	2.3	2.1	2.1	2.1	2.1	2.1
	Wheelbase	38.1	38.6	38.7	39.2	39.4	39.9	40.2

Frame details

We spared no details in the design of this bike. Starting with the fully butted tubeset, where we've put the stiffness and strength where it needs to be, without needlessly reducing the outer diameter of the tubes. Butting reduced the overall weight, and the thin tubing shows in the lively, resilient ride. Some call it silky.

We use an outer-butted head tube which provides a home for the integral $1^{1/8}$" headset. The outer butting puts more beef at the bearing seats as well as providing increased weld area for additional frame stiffness and strength.

The tubing is shaped to tune the ride, while adding weld area and additional strength at both the top tube and bottom bracket.

The stays are also shaped, instead of cost cutting with cylindrical tubing. This extra attention to detail makes the bike more comfortable at the saddle, yet actually increases the pedal response when sprinting or climbing. Sure, it costs more, but it makes the bike look so much nicer! Even the dropouts are elegant, functional pieces.

The seat tube of our Ti bikes uses a composite internal sleeve to prevent galvanic corrosion of the seatpost to the frame. Do not grease the seatpost, or the seatpost clamp may not provide adequate clamping force.

All LeMond road bikes have 2 water bottle mounts.

Tete de Course

FRAMESET

MAIN TUBES	Reynolds butted 3/2.5 titanium	
STAYS	Reynolds titanium, tapered	
	Frame weight	*3.1 lb (1.41 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	LeMond internal	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*8.0*

CONTROLS

HANDLEBAR	3T Zepp XL	
	Clamp diameter, mm	*31.75*
STEM	3T Zepp XL	
	Steerer clamp height, mm	*34.0*
SHIFT LEVERS	Shimano Dura-Ace STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Dura-Ace	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Dura-Ace	
CRANKSET	Shimano Dura-Ace 53/39	
	Bolt hole circle, mm	*130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano Dura-Ace	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Dura-Ace 12-23, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race X-Lite, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race X-Lite, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, Ti/leather	
BRAKES	Shimano Dura-Ace	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 49), pump peg (not on 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Full titanium tubeset without any shortcuts

Wheelset

Bontrager Race X-Lite- incredibly light, yet strong with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Pro level- Dura-Ace, 3T

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
16	64	88
17	61	82
19	54	74
21	49	67
23	45	61

BIKE WEIGHT

16.7 lb.
7.58 kg.

COLORS

Brushed Titanium/Yellow Deboss • Deboss decals • Black Fade fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	65	67	69	71	73	74	76
	Cm	166	171	176	180	185	189	193
Handlebar	Width, mm	420	440	440	460	460	460	460
Stem	Length, mm	90	100	110	110	120	120	130
	Angle	10	10	10	10	10	10	10
Crank	Length, mm	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250
Steerer	Length, mm	180.0	195.0	212.0	229.0	247.0	269.0	287.0

Le Victoire

FRAMESET

MAIN TUBES	Reynolds titanium, double butted	
STAYS	Reynolds titanium, tapered	
	Frame weight	*3.1 lb (1.41 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	LeMond internal	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*8.0*

CONTROLS

HANDLEBAR	3T Forgie XL	
	Clamp diameter, mm	*31.75*
STEM	3T Forgie XL	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Ultegra	
CRANKSET	Shimano Ultegra 53/39	
	Bolt hole circle, mm	*130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race Lite Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race Lite Road, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, CrMo/leather	
BRAKES	Shimano Ultegra	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 49), pump peg (not on 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Full titanium tubeset without any shortcuts

Wheelset

Bontrager wheelset- aerodynamic for speed, strong and low maintenance with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Race level- Ultegra; Pro performance for economical price

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
17	61	82
19	54	74
21	49	67
23	45	61
25	41	56

BIKE WEIGHT

18.5 lb.
8.40 kg.

COLORS

Brushed Titanium/Blue Deboss • Deboss decals • Black Fade fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	65	67	69	71	72	74	76
	Cm	166	171	176	181	182	188	193
Handlebar	Width, mm	420	440	440	460	460	460	460
Stem	Length, mm	90	100	110	110	110	120	130
	Angle	10	10	10	10	10	10	10
Crank	Length, mm	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250
Steerer	Length, mm	187.0	202.0	219.0	236.0	254.0	276.0	294.0

Le Victoire T

FRAMESET

MAIN TUBES	Reynolds titanium, double butted	
STAYS	Reynolds titanium, tapered	
	Frame weight	*3.1 lb (1.41 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	LeMond internal	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*8.0*

CONTROLS

HANDLEBAR	3T Forgie XL	
	Clamp diameter, mm	*31.75*
STEM	3T Forgie XL	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra T	
	Cable routing	*Down pull*
	Attachment	*Braze-on type w/31.8mm clamp*
RR DERAILLEUR	Shimano Ultegra GS	
CRANKSET	Shimano Ultegra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 118, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race Lite Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race Lite Road, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, CrMo/leather	
BRAKES	Shimano Ultegra	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 49), pump peg (not on 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Full titanium tubeset without any shortcuts

Wheelset

Bontrager wheelset- aerodynamic for speed, strong and low maintenance with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Race level- Ultegra; Pro performance for economical price, but easy pedaling triple chainrings

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

18.8 lb.
8.54 kg.

COLORS

Brushed Titanium/Blue Deboss • Deboss decals • Black Fade fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	65	67	69	71	73	74	76
	Cm	166	171	176	181	185	188	193
Handlebar	Width, mm	420	440	440	460	460	460	460
Stem	Length, mm	90	100	110	110	120	120	130
	Angle	10	10	10	10	10	10	10
Crank	Length, mm	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250
Steerer	Length, mm	187.0	202.0	219.0	236.0	254.0	276.0	294.0

New for 2001

We first built a Reynolds 853 LeMond in 1996. These frames are very similar, but improved. For this year, we have made slight changes in the tube designs to further tweak the great ride. They also now use an oversize headset system (see page 20).

Geometry

The 853 LeMond models use Greg's proven geometry, like all LeMond models. These bikes ride really, really well, so we've used the same geometry centerlines for all of them. See page 10-11 for a more detailed description.

Ride

Steel is famous for two things: durability and ride quality (see Comparing Materials on pages 2-3 and Reynold's 853, page 7). Combined with Greg's geometry, these bikes give an awesome ride. It's no wonder the Zurich has been our most popular model.

The outstanding ride qualities of these frames are a smooth, comfortable ride and a wonderful balance and stable feeling. They are very predictable in corners, even allowing a rider to 'push' the bike around a turn. These qualities make the steel LeMond bikes particularly fine bikes for smaller riders, although we know lots of big riders who swear by the feel of steel.

Frame details

Starting with the butted tubeset, we've put the stiffness and strength where it needs to be. The material, wall thicknesses, and butting reduced the overall weight to make these very light steel framesets.

853 Designer Select

The Buenos Aires, Tourmalet, and Nevada City share a frameset built from round 853 Designer Select tubes. This tubeset combines an 853 main triangle with Reynolds 525 stays. 853 and 525 have the same modulus (stiffness), but 853 has a greater tensile strength. In the main triangle, the higher strength of 853 allows us to use thinner, lighter tubes. With the stays, there's a limit on how thin the metal can be that's not determined by strength, but weldable thickness. If the material were any thinner, it would be extremely difficult to make a reliable weld. Since the 525 stays are already stronger than they need to be, there's no performance advantage to using 853 in the stays, just added cost. For the rider looking for LeMond performance at a more affordable price, we didn't feel it wise to use a more expensive material just to upgrade the frame sticker.

853 Pro

On Maillot Jaune and Zurich, the tubing is shaped to tune the ride. The down tube is bi-axial, meaning it is ovalized in two planes. (Fig. 12) The upper end is taller than wide. The lower end is wider than tall.

The stiffness of a tube in a given direction is determined by the length of the axis in the plane in which the force is applied (Fig. 13). By using an oval shape, the tube gains stiffness in the plane where its wider, and the smaller axis across the oval has a decrease in stiffness This allows us to tune the ride. In addition, stiffness in a structure like a bike frame can also add to its strength, since stiffness is resistance to deflection, and you must deflect the frame before you can bend it. By ovalizing the down tube at the head tube junction, we've added frontal impact strength to these frames.

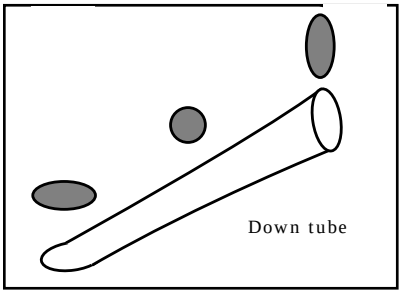
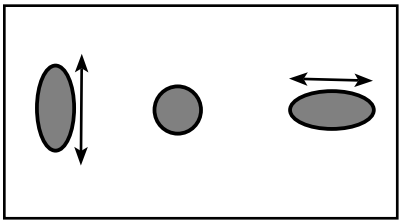


Fig. 12

In addition to the performance increase of our design, shaping the tubes has other benefits. Tubes shaped in this way provide a greater weld area, directly increasing the frame strength.


Fig. 13

All LeMond road bikes have 2 water bottle mounts.

MILLIMETERS	Frame sizes	49	51	53	55	57	59	61
	Head angle	72.0	72.5	73.0	73.5	73.5	74.0	74.0
	Seat angle	74.0	73.8	73.3	73.0	72.5	72.5	72.0
	Standover	752	754	772	790	808	831	848
	Seat tube	517	537	557	576	596	616	636
	Head tube	85	100	116	133	151	175	195
	Eff top tube	519	532	545	565	576	591	606
	Chainstays	412	415	415	415	415	417	417
	BB height	266	266	266	266	266	270	270
	Offset	47	47	47	45	45	43	43
	Trail	61	58	55	54	54	53	53
	Wheelbase	967	980	984	995	1000	1013	1021
INCHES	Standover	29.6	29.7	30.4	31.1	31.8	32.7	33.4
	Seat tube	20.3	21.1	21.9	22.7	23.5	24.3	25.0
	Head tube	3.3	3.9	4.6	5.2	5.9	6.9	7.7
	Eff top tube	20.4	20.9	21.5	22.3	22.7	23.3	23.9
	Chainstays	16.2	16.3	16.3	16.3	16.3	16.4	16.4
	BB height	10.5	10.5	10.5	10.5	10.5	10.6	10.6
	Offset	1.9	1.9	1.9	1.8	1.8	1.7	1.7
	Trail	2.4	2.3	2.1	2.1	2.1	2.1	2.1
	Wheelbase	38.1	38.6	38.7	39.2	39.4	39.9	40.2

LeMond for Women

New for 2002

Greg LeMond created his own geometry during his racing days. Over those years he rode many bikes, and often rode them to success. To maximize his own results, Greg made a study of what makes a bike perform; fit, function, handling, comfort, aerodynamics, low weight, and durability.

Now we've applied those lessons to the needs of a woman, a woman who still wants to achieve racing success. These are not 'comfort' bikes, they are thoroughbreds. But they are thoroughbreds designed to interface with a woma's proportions and ergonomics.

Geometry

These bikes ride really, really well. Our goal was to create a geometry that provided similar benefits to a woman that Greg's classic geomtry provides to a man; smoother profile, more powerful pedaling, and predictable cornering manners ideal for long road races and stage races.

Ride

Steel is famous for two things: durability and ride quality. Combined with Greg's new Women's geometry, these bikes give an awesome ride.

The outstanding ride qualities of these frames are a smooth, comfortable ride and a wonderful balance and stable feeling. They are very predictable in corners, even allowing a rider to 'push' the bike around a turn. These qualities make the steel LeMond bikes particularly fine bikes for smaller riders, although we know lots of big riders who swear by the feel of steel.

Frame details

Starting with the butted tubeset, we've put the stiffness and strength where it needs to be. The material, wall thicknesses, and butting reduced the overall weight to make these very light steel framesets.

853 Designer Select

The Tourmalet frameset is built from round 853 Designer Select tubes. This tubeset combines an 853 main triangle with Reynolds 525 stays. 853 and 525 have the same modulus (stiffness), but 853 has a greater tensile strength. In the main triangle, the higher strength of 853 allows us to use thinner, lighter tubes. With the stays, there's a limit on how thin the metal can be that's not determined by strength, but weldable thickness. If the material were any thinner, it would be extremely difficult to make a reliable weld. Since the 525 stays are already stronger than they need to be, there's no performance advantage to using 853 in the stays, just added cost. For the rider looking for LeMond performance at a more affordable price, we didn't feel it wise to use a more expensive material just to upgrade the frame sticker.

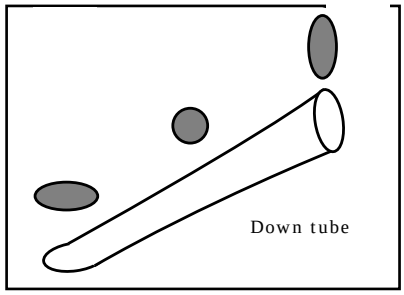
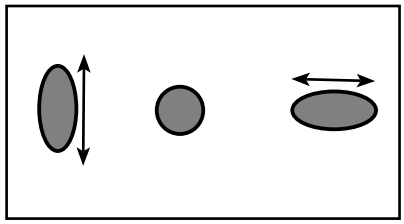


Fig. 12


Fig. 13

	Frame sizes	45	49	53
	Head angle	71.0	72.0	72.5
	Seat angle	75.0	74.5	73.8
MILLIMETERS	**Standover**	725	756	784
	Seat tube	477	517	554
	Head tube	85	100	116
	Eff top tube	498	510	530
	Chainstays	412	415	415
	BB height	266	266	266
	Offset	47.0	47.0	47.0
	Trail	67	61	58
	Wheelbase	968	970	979
INCHES	**Standover**	28.5	29.8	30.9
	Seat tube	18.8	20.3	21.8
	Head tube	3.3	3.9	4.6
	Eff top tube	19.6	20.1	20.9
	Chainstays	16.2	16.3	16.3
	BB height	10.5	10.5	10.5
	Offset	1.9	1.9	1.9
	Trail	2.6	2.4	2.3
	Wheelbase	38.1	38.2	38.5

853 Pro

On the Zurich, the tubing is shaped to tune the ride. The down tube is bi-axial, meaning it is ovalized in two planes. The upper end is taller than wide. The lower end is wider than tall.

The stiffness of a tube in a given direction is determined by the length of the axis in the plane in which the force is applied. By using an oval shape, the tube gains stiffness in the plane where its wider, and the smaller axis across the oval has a decrease in stiffness This allows us to tune the ride. In addition, stiffness in a structure like a bike frame can also add to its strength, since stiffness is resistance to deflection, and you must deflect the frame before you can bend it. By ovalizing the down tube at the head tube junction, we've added frontal impact strength to these frames.

In addition to the performance increase of our design, shaping the tubes has other benefits. Tubes shaped in this way provide a greater weld area, directly increasing the frame strength.

All LeMond road bikes have 2 water bottle mounts.

Maillot Jaune

FRAMESET

MAIN TUBES	Reynolds 853 Pro	
STAYS	Reynolds 853 Pro	
	Frame weight	*3.3 lb (1.50 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Dia-Compe S-6 Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.1*

CONTROLS

HANDLEBAR	3T Zepp XL	
	Clamp diameter, mm	*31.75*
STEM	3T Zepp XL	
	Steerer clamp height, mm	*34.0*
SHIFT LEVERS	Shimano Dura-Ace STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Dura-Ace	
	Cable routing	*Down pull*
	Attachment	*Braze-on type w/31.8mm clamp*
RR DERAILLEUR	Shimano Dura-Ace	
CRANKSET	Shimano Dura-Ace 53/39	
	Bolt hole circle, mm	*130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano Dura-Ace	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Dura-Ace 12-23, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race X-Lite, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race X-Lite, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Revolution 14/17G (Aero R side rear), al nips	
	Front, mm	*279, Radial*
	Rear, mm	*271/271, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, Ti/leather	
BRAKES	Shimano Dura-Ace	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Pro tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Race X-Lite- incredibly light, yet strong with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Pro level- Dura-Ace, 3T

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
16	64	88
17	61	82
19	54	74
21	49	67
23	45	61

BIKE WEIGHT

17.1 lb.
7.76 kg.

COLORS

Metallic Yellow/Red • Black/Red/Yellow decals • Black fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	66	67	68	71	72	74	76
	Cm	168	171	174	180	182	188	194
Handlebar	Width, mm	420	440	440	460	460	460	460
Stem	Length, mm	100	100	100	110	110	120	130
	Angle	10	10	10	10	10	10	10
Crank	Length, mm	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250
Steerer	Length, mm	182.1	197.1	213.1	229.6	248.1	272.1	292.1

Zurich

FRAMESET

MAIN TUBES	Reynolds 853 Pro	
STAYS	Reynolds 853 Pro	
	Frame weight	*3.3 lb (1.50 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek S-2 Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T Forgie XL	
	Clamp diameter, mm	*31.75*
STEM	3T Forgie XL	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Ultegra	
CRANKSET	Shimano Ultegra 53/39	
	Bolt hole circle, mm	*130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race Lite Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race Lite Road, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, CrMo/leather	
BRAKES	Shimano Ultegra	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Pro tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Race Lite wheels- aero for speed, strong with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Race level- Ultegra group gives Pro performance at an affordable price

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
17	61	82
19	54	74
21	49	67
23	45	61
25	41	56

BIKE WEIGHT

19.0 lb.
8.63 kg.

COLORS

Speed Blue/Chad Silver • Silver/Blue decals • Chad Silver fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	65	65	67	68	71	72	74	76
	Cm	165	166	171	174	181	182	189	194
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	90	90	100	100	110	110	120	130
	Angle	10	10	10	10	10	10	10	10
Crank	Length, mm	170	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Zurich T

FRAMESET

MAIN TUBES	Reynolds 853 Pro	
STAYS	Reynolds 853 Pro	
	Frame weight	*3.3 lb (1.50 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek S-2 Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T Forgie XL	
	Clamp diameter, mm	*31.75*
STEM	3T Forgie XL	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra T	
	Cable routing	*Down pull*
	Attachment	*Braze-on type w/31.8mm clamp*
RR DERAILLEUR	Shimano Ultegra GS	
CRANKSET	Shimano Ultegra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 118, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race Lite Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race Lite Road, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM Era, CrMo/leather	
BRAKES	Shimano Ultegra	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Pro tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Race Lite wheels- aero for speed, strong with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Race level- Ultegra group gives Pro performance at an affordable price

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

19.3 lb.
8.76 kg.

COLORS

Speed Blue/Chad Silver • Silver/Blue decals • Chad Silver fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	65	65	67	68	71	72	74	76
	Cm	165	166	171	174	181	182	189	194
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	90	90	100	100	110	110	120	130
	Angle	10	10	10	10	10	10	10	10
Crank	Length, mm	170	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Zurich T women's

FRAMESET		
MAIN TUBES	Reynolds 853 Pro	
STAYS	Reynolds 525	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Air Rail	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek S-2 Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*26.5*
CONTROLS		
HANDLEBAR	3T Forgie XL	
	Clamp diameter, mm	*31.75*
STEM	3T Forgie XL	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	
DRIVETRAIN		
FT DERAILLEUR	Shimano Ultegra T	
	Cable routing	*Down pull*
	Attachment	*Braze-on type w/31.8mm clamp*
RR DERAILLEUR	Shimano Ultegra GS	
CRANKSET	Shimano Ultegra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 118, Splined, Shimano*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	
WHEELSET		
FRONT WHEEL	Bontrager Race Lite Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Race Lite Road, 24°	
	E.R.D., mm	*595*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Grand Prix 3000	
	Tire size	*700 x 23c*
SPOKES	DT Aero, alloy nipples	
	Front, mm	*278, Radial*
	Rear, mm	*291/291, 2x*
INNER TUBES	Presta valve	
OTHER		
SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	Oasis women's, leather/Cro-Moly	
BRAKES	Shimano Ultegra	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond women's geometry

Reynolds 853 Pro tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Race Lite wheels- aero for speed, strong with PST™

Continental Grand Prix 3000 tires- super fast rolling

Components

Race level- Ultegra group gives Pro performance at an affordable price

Size specific- cranks, bars, saddle to fit a woman

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

19.1 lb.
8.67 kg.

COLORS

Speed Blue/Chad Silver • Silver/Blue decals • Chad Silver fork

FIT

Frame	Size	45	49	53
Rider height	Inches	64	65	67
	Cm	163	165	171
Handlebar	Width, mm	420	420	420
Stem	Length, mm	90	90	100
	Angle	10	10	10
Crank	Length, mm	165	170	170
Seatpost	Length, mm	250	250	250
Steerer	Length, mm	188.5	203.5	219.5

Buenos Aires

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Carbon Classic	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek C-1 Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T Start	
	Clamp diameter, mm	*26.0*
STEM	3T THE w/shim to 25.4	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Ultegra	
CRANKSET	Shimano Ultegra 53/39	
	Bolt hole circle, mm	*130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Select Road, 32°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium, CrMo rails	
BRAKES	Shimano Ultegra	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 49), pump peg (not on 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Select wheels- light for speed, strong with PST™

Components

Race level- Ultegra group

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
17	61	82
19	54	74
21	49	67
23	45	61
25	41	56

BIKE WEIGHT

20.3 lb.
9.22 kg.

COLORS

Metallic Red/Silver • Red/Silver decals • Metallic Red fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	64	67	68	71	72	74	77
	Cm	164	171	174	181	182	189	195
Handlebar	Width, mm	420	440	440	460	460	460	460
Stem	Length, mm	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12
Crank	Length, mm	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Buenos Aires T

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Carbon Classic	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek C-1 Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T Start	
	Clamp diameter, mm	*26.0*
STEM	3T THE w/shim to 25.4	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra T	
	Cable routing	*Down pull*
	Attachment	*Braze-on type w/31.8mm clamp*
RR DERAILLEUR	Shimano Ultegra GS	
CRANKSET	Shimano Ultegra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 118, Splined, Shimano*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Select Road, 32°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium, CrMo rails	
BRAKES	Shimano Ultegra	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Bontrager Select wheels- light for speed, strong with PST™

Components

Race level- Ultegra/105 group with 9 speed, Flite Deck ready

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

20.6 lb.
9.35 kg.

COLORS

Metallic Red/Silver • Red/Silver decals • Metallic Red fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	64	67	68	71	72	74	77
	Cm	163	164	171	174	181	182	189	195
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12	12
Crank	Length, mm	170	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Alpe d'Huez

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Carbon Classic	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek C-1 Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T THE	
	Clamp diameter, mm	*26.0*
STEM	3T THE w/shim to 25.4	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano 105 STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano 105	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano 105	
CRANKSET	Shimano 105 53/39	
	Bolt hole circle, mm	*74/130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 109.5, Splined, Shimano*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Shimano Tiagra hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Shimano Tiagra hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Alloy dual pivot, cartridge pads	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Performance level- 105 group with Tiagra hubs

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
17	61	82
19	54	74
21	49	67
23	45	61
25	41	56

BIKE WEIGHT

20.4 lb.
9.26 kg.

COLORS

Metallic Green/Black • Green/Black decals • Metallic Green fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	64	67	68	71	72	74	77
	Cm	163	164	171	174	181	182	189	195
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12	12
Crank	Length, mm	170	170	172.5	172.5	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Alpe d'Huez T

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Carbon Classic	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek C-1 Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3T THE	
	Clamp diameter, mm	*26.0*
STEM	3T THE w/shim to 25.4	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano 105 STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano 105 T	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano 105 GS	
CRANKSET	Shimano 105 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 118, Splined, Shimano*
CHAIN	Shimano HG-53	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Shimano Tiagra hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Shimano Tiagra hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	LeMond, 2014 alloy	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Alloy dual pivot, cartridge pads	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Performance level- 105 with Tiagra hubs, triple chainring gearing makes the hills a little easier

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

20.7 lb.
9.40 kg.

COLORS

Metallic Green/Black • Green/Black decals • Metallic Green fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	64	67	68	71	72	74	77
	Cm	163	164	171	174	181	182	189	195
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12	12
Crank	Length, mm	170	170	170	175	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	188.5	188.5	203.5	219.5	236.0	254.5	278.5	298.5

Tourmalet

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Aero Cro-Moly	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Alloy Ergo	
	Clamp diameter, mm	*26.0*
STEM	3T THE	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Tiagra STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Tiagra	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano 105	
CRANKSET	Shimano Tiagra 53/39	
	Bolt hole circle, mm	*74/130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 110, Square*
CHAIN	SRAM PC-59 Power	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG50 12-25, 9spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Shimano Tiagra hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Alloy dual pivot	
PEDALS	Alloy/alloy cage w/clips and straps	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Performance level- Tiagra group with 9 speed offers lots of close-ratio gears to choose from

GEARING

	39	53
12	86	117
13	79	108
14	74	100
15	69	93
17	61	82
19	54	74
21	49	67
23	45	61
25	41	56

BIKE WEIGHT

21.7 lb.
9.85 kg.

COLORS

Dark Blue Metallic/Silver Metallic • Silver/Blue decals • Medium Blue Metallic fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	64	67	68	71	72	74	77
	Cm	162	163	171	174	180	182	188	195
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12	12
Crank	Length, mm	170	170	170	170	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	186.5	186.5	201.5	217.5	234.0	252.5	276.5	296.5

Tourmalet T

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 525	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Aero Cro-Moly	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Alloy Ergo	
	Clamp diameter, mm	*26.0*
STEM	3T THE	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Tiagra STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Tiagra T	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano 105 GS	
CRANKSET	Shimano Tiagra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 113, Square*
CHAIN	SRAM PC-59 Power	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG50 12-25, 9spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Shimano Tiagra hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Alloy dual pivot	
PEDALS	Alloy/alloy cage w/clips and straps	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Performance level- Tiagra group with triple chainrings and 9 speed offers lots of close-ratio gears to choose from

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

22.0 lb.
9.99 kg.

COLORS

Dark Blue Metallic/Silver Metallic • Silver/Blue decals • Medium Blue Metallic fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	64	67	68	71	72	74	77
	Cm	162	163	171	174	180	182	188	195
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	80	100	100	110	110	120	135
	Angle	12	12	12	12	12	12	12	12
Crank	Length, mm	170	170	170	170	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	186.5	186.5	201.5	217.5	234.0	252.5	276.5	296.5

Tourmalet T women's

FRAMESET		
MAIN TUBES	Reynolds 853 Designer Select	
STAYS	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 kg)*
FORK	Aero Cro-Moly	
	Travel, mm	
	Axle-crown length, mm	*371*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS		
HANDLEBAR	Alloy Ergo	
	Clamp diameter, mm	*26.0*
STEM	3T THE	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Tiagra STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN		
FT DERAILLEUR	Shimano Tiagra T	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano 105 GS	
CRANKSET	Shimano Tiagra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 113, Square*
CHAIN	SRAM PC-59 Power	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG50 12-25, 9spd	

WHEELSET		
FRONT WHEEL	Alloy, QR hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Shimano Tiagra hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER		
SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*27.2*
SADDLE	Oasis women's	
BRAKES	Alloy dual pivot	
PEDALS	Alloy/alloy cage w/clips and straps	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond Women's geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Performance level- Tiagra group with triple chainrings and 9 speed offers lots of close-ratio gears to choose from

Size specific- componenets selected to optimize a woman's performance; cranks, handlebars, saddle

GEARING

	30	42	52
12	66	93	115
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
25	32	44	55

BIKE WEIGHT

21.8 lb.
9.90 kg.

COLORS

Dark Blue Metallic/Silver Metallic • Silver/Blue decals • Medium Blue Metallic fork

FIT

Frame	Size	45	49	53
Rider height	Inches	63	64	67
	Cm	161	163	171
Handlebar	Width, mm	420	420	420
Stem	Length, mm	80	80	100
	Angle	12	12	12
Crank	Length, mm	170	170	170
Seatpost	Length, mm	250	250	250
Steerer	Length, mm	186.5	201.5	217.5

Nevada City

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select
STAYS	Reynolds 853 Designer Select
Frame weight	*3.7 lb (1.68 kg)*
FORK	Aero Cro-Moly
Travel, mm	
Axle-crown length, mm	*371*
HEADSET	STS Aheadset
Size	*22.2/30.2/26.4*
Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Alloy Ergo
Clamp diameter, mm	*26.0*
STEM	Alloy quick change, direct connect
Steerer clamp height, mm	*40.0*
SHIFT LEVERS	Shimano Sora STI Dual Control
BRAKE LEVERS	Integrated brake/shift
GRIPS	Powercork

DRIVETRAIN

FT DERAILLEUR	Shimano Sora T
Cable routing	*Down pull*
Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Sora GS
CRANKSET	Shimano Sora 52/42/30
Bolt hole circle, mm	*74/130*
BB	Shimano BB-UN40
Shell x axle, mm	*68 x 113, Square*
CHAIN	HG-50
Chain type	*3/32"*
Chain length (links)	*108*
CASSETTE	Shimano HG50 13-26, 8spd

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Aurora rim
E.R.D., mm	*610*
Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm
Tire size	*700 x 25c*
REAR WHEEL	Alloy, QR hub, 32°, Aurora RDR rim
E.R.D., mm	*603*
Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm
Tire size	*700 x 25c*
SPOKES	DT 14G stainless
Front, mm	*299, 3x*
Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve

OTHER

SEATPOST	Bontrager Sport
Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium
BRAKES	Alloy dual pivot
PEDALS	Alloy w/clips and straps
Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt
Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts (1 bottle on 47, 49), pump peg (not on 47, 49, 51)

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Components

Enthusiast level- Sora group with Dual Control- shift and brake without moving your hands from the levers.

GEARING

	30	42	52
13	61	85	106
14	57	79	98
15	53	74	92
17	47	65	81
19	42	58	72
21	38	53	66
23	35	48	60
26	31	43	53

BIKE WEIGHT

23.0 lb.
10.44 kg.

COLORS

Silver Metallic/Blue Metallic • Silver/Blue decals • Silver Metallic fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	64	65	67	69	71	72	74	76
	Cm	163	165	170	175	179	184	188	193
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	85	90	100	110	110	120	120	130
	Angle	0	0	0	0	0	0	0	0
Crank	Length, mm	170	170	170	170	175	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250	250	250
Steerer	Length, mm	185.5	185.5	200.5	216.5	233.0	251.5	275.5	295.5

For 2002

We first built a Reynolds 853 LeMond in 1996. The Poprad uses this same great material, but in a competition cyclocross design. The frame remains unchanged from its introduction in 2001.

Geometry

The Poprad combines dirt-worthy handling with the advanced ergonomics of Greg's geometry to create a fast, stable ride.

The dirt features of the geometry include a slacker head tube for more trail. This allows the bike to track straighter in rough terrain. The bottom bracket is a touch higher, increasing pedal clearance for ruts and sidehills. The chainstays are longer, so the bike is more comfortable on rough surfaces. There is a lot more tire clearance, for riding bigger tires, or in muddy conditions.

Although the function of the bike is different, the rider compartment is within 1 or 2 millimeters of being exactly the same as our road bikes. If you like your LeMond road bike on pavement, you'll love the Poprad in the dirt.

Ride

Steel is famous for two things: durability and ride quality. Combined with Greg's geometry, the Poprad give an awesome ride.

The outstanding ride qualities of this frame is a smooth, comfortable ride and a wonderful reassurance in soft conditions.

Frame details

Starting with the butted tubeset, we've put the stiffness and strength where it needs to be. The material, wall thicknesses, and butting reduced the overall weight to make these very light steel framesets.

853 Designer Select

The Poprad is built from round 853 Designer Select tubes. This tubeset combines an 853 main triangle with Reynolds 525 stays. 853 and 525 have the same modulus (stiffness), but 853 has a greater tensile strength. In the main triangle, the higher strength of 853 allows us to use thinner, lighter tubes. With the stays, there's a limit on how thin the metal can be that's not determined by strength, but weldable thickness. If the material were any thinner, it would be extremely difficult to make a reliable weld. Since the 525 stays are already stronger than they need to be, there's no performance advantage to using 853 in the stays, just added cost.

All LeMond road bikes have 2 water bottle mounts.

	Frame sizes	49	52	55	57	59
	Head angle	72.0	72.0	72.5	72.5	73.0
	Seat angle	74.0	73.5	73.0	72.5	72.5
MILLIMETERS						
	Standover	776	795	817	833	852
	Seat tube	519	549	578	598	618
	Head tube	85	100	116	133	151
	Eff top tube	525	542	562	578	590
	Chainstays	430	430	430	430	430
	BB height	269	269	269	269	269
	Offset	45	45	45	45	45
	Trail	65	65	62	62	59
	Wheelbase	992	1004	1015	1025	1033
INCHES						
	Standover	30.5	31.3	32.2	32.8	33.5
	Seat tube	20.4	21.6	22.8	23.5	24.3
	Head tube	3.3	3.9	4.6	5.2	5.9
	Eff top tube	20.7	21.3	22.1	22.7	23.2
	Chainstays	16.9	16.9	16.9	16.9	16.9
	BB height	10.6	10.6	10.6	10.6	10.6
	Offset	1.8	1.8	1.8	1.8	1.8
	Trail	2.6	2.6	2.4	2.4	2.3
	Wheelbase	39.0	39.5	39.9	40.4	40.7

Poprad

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select Cross	
STAYS	Reynolds 853 Designer Select Cross	
	Frame weight	*3.7 lb (1.70 kg)*
FORK	StraightBlade Cross	
	Travel, mm	
	Axle-crown length, mm	*405*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Bontrager Race CX	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Sora STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Sora	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Sora	
CRANKSET	Shimano Sora 52/39	
	Bolt hole circle, mm	*130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 110, Square*
CHAIN	HG50	
	Chain type	*3/32"*
	Chain length (links)	*112*
CASSETTE	Shimano HG50 13-26, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Aurora rim	
	E.R.D., mm	*610*
	Rim strip	*Velox 16mm*
FRONT TIRE	Bontrager Jones CX	
	Tire size	*700 x 32c*
REAR WHEEL	Alloy, QR hub, 32°, Aurora RDR rim	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	Bontrager Jones CX	
	Tire size	*700 x 32c*
SPOKES	14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Avid Shorty 4	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt, cable hanger	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts	

Stem shim from 1" to 1 1/8"
Front cable hanger

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Reynolds 853 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Aurora rims- aero for speed, machined sidewalls for smooth braking

Bontrager Jones CX tires- grip designed by a mountain bike legend

Components

Enthusiast level- Sora group with 'Cross gearing- wide range, yet shift accuracy of a double chainring

Shorty 4 brakes- powerful stopping, low clearance

Ultegra bar-end shifters- durable for real 'Cross action

GEARING

	39	52
13	81	108
14	75	100
15	70	94
17	62	83
19	55	74
21	50	67
23	46	61
26	41	54

BIKE WEIGHT

23.8 lb.
10.81 kg.

COLORS

Gold/Metallic Orange • White/Gold decals • Gold Metallic fork

FIT

Frame	Size	49	52	55	57	59
Rider height	Inches	67	69	70	73	74
	Cm	169	175	179	185	189
Handlebar	Width, mm	420	440	460	460	460
Stem	Length, mm	90	105	105	120	120
	Angle	5	10	10	10	10
Crank	Length, mm	170	175	175	175	175
Seatpost	Length, mm	300	300	300	300	300
Steerer	Length, mm	180.0	195.0	211.0	227.5	246.0

For 2002

We first built a Reynolds 853 LeMond in 1996. The Poprad uses this same great material, but in a competition cyclocross design. The frame remains unchanged from its introduction in 2001.

Geometry

The Wayzata combines the advanced ergonomics of Greg's geometry with an upright, city-type position to create a fast, stable ride.

The hybrid features of the geometry include a slacker head tube for more trail. The chainstays are longer, so the bike is more comfortable on rough surfaces. There is a lot more tire clearance, for riding bigger tires.

Ride

Steel is famous for two things: durability and ride quality. Combined with Greg's geometry, the Wayzata give an awesome ride. Its very nimble and lively feeling, as well as providing a great amount of comfort.

Frame details

Starting with the butted tubeset, we've put the stiffness and strength where it needs to be. The material, wall thicknesses, and butting reduced the overall weight to make these very light steel framesets.

853 Designer Select

The Wayzata is built from round 853 Designer Select tubes. This tubeset combines an 853 main triangle with Reynolds 525 stays. 853 and 525 have the same modulus (stiffness), but 853 has a greater tensile strength. In the main triangle, the higher strength of 853 allows us to use thinner, lighter tubes. With the stays, there's a limit on how thin the metal can be that's not determined by strength, but weldable thickness. If the material were any thinner, it would be extremely difficult to make a reliable weld. Since the 525 stays are already stronger than they need to be, there's no performance advantage to using 853 in the stays, just added cost.

All LeMond hybrid bikes have 2 water bottle mounts.

	Frame sizes	49	52	55	57	59
	Head angle	72.0	72.0	72.5	72.5	73.0
	Seat angle	74.0	73.5	73.0	72.5	72.5
MILLIMETERS	Standover	776	795	817	833	852
	Seat tube	519	549	578	598	618
	Head tube	85	100	116	133	151
	Eff top tube	525	542	562	578	590
	Chainstays	430	430	430	430	430
	BB height	269	269	269	269	269
	Offset	45	45	45	45	45
	Trail	65	65	62	62	59
	Wheelbase	992	1004	1015	1025	1033
INCHES	Standover	30.5	31.3	32.2	32.8	33.5
	Seat tube	20.4	21.6	22.8	23.5	24.3
	Head tube	3.3	3.9	4.6	5.2	5.9
	Eff top tube	20.7	21.3	22.1	22.7	23.2
	Chainstays	16.9	16.9	16.9	16.9	16.9
	BB height	10.6	10.6	10.6	10.6	10.6
	Offset	1.8	1.8	1.8	1.8	1.8
	Trail	2.6	2.6	2.4	2.4	2.3
	Wheelbase	39.0	39.5	39.9	40.4	40.7

Wayzata

FRAMESET

MAIN TUBES	Reynolds 853 Designer Select Cross	
STAYS	Reynolds 853 Designer Select Cross	
	Frame weight	*3.7 lb (1.70 kg)*
FORK	StraightBlade Cross	
	Travel, mm	
	Axle-crown length, mm	*405*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Bontrager Select	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Comp	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano R440	
BRAKE LEVERS	Avid AD 3L, long pull	
GRIPS	Serfas dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano Tiagra T	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Tiagra GS	
CRANKSET	Shimano Tiagra 52/42/30	
	Bolt hole circle, mm	*74/130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 113, Square*
CHAIN	SRAM PC-59 Power	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano HG50 12-25, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Select Road, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
REAR WHEEL	Bontrager Select Road, 24°	
	E.R.D., mm	*603*
	Rim strip	*Velox 16mm*
REAR TIRE	Continental Ultra 3000	
	Tire size	*700 x 23c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*293/294, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Avid Single Digit 3, linear pull	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts	

Stem shim from 1" to 1 1/8"

Why LeMond leads the peloton:

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Components

Enthusiast level- Sora group with 'Cross gearing- wide range, yet shift accuracy of a double chainring

Shorty 4 brakes- powerful stopping, low clearance

Ultegra bar-end shifters- durable for real 'Cross action

GEARING

	30	42	52
12	68	95	117
13	62	87	108
14	58	81	100
15	54	76	94
17	48	67	83
19	43	60	74
21	39	54	67
23	35	49	61
25	32	45	56

BIKE WEIGHT

23.8 lb.
10.81 kg.

COLORS

Titanium/Pearl White • Black/Titanium decals • Titanium fork

FIT

Frame	Size	49	52	55	57	59
Rider height	Inches	64	66	68	70	72
	Cm	161	168	173	179	183
Handlebar	Width, mm	600	600	600	600	600
Stem	Length, mm	90	105	105	120	120
	Angle	5	10	10	10	10
Crank	Length, mm	170	175	175	175	175
Seatpost	Length, mm	300	300	300	300	300
Steerer	Length, mm	171.5	186.5	202.5	219.0	237.5

A Word About Torque Specifications

Torque is a measurement of the tightness of a threaded fastener such as a screw or bolt, determined by using a torque wrench. The torque specifications in this manual are listed to help you determine the correct tightness of parts and their threaded fasteners. More than anything, these should be used to make sure you do not over tighten the fasteners. Applying more than recommended torque to a fastener does not provide extra holding power and may actually lead to damage or failure of a part. For example, over tightening bar ends can crush a handlebar. Once a part is tight enough to stay tight and be safe, it rarely does any good to tighten the part any further.

We offer a range of torque specifications. Similar parts in different bikes may require different torques due to slight differences.

There are simple function tests you should perform to make sure a part is properly tightened. They should be performed whether a torque wrench was used or not and will suffice as a test for proper tightness if you do not have a torque wrench. As an example after assembling a bike you should determine if a stem is properly tightened to the fork. Place the front wheel between your knees and try to rotate the stem by twisting the handlebars from side to side. If the stem does not twist, it is properly tightened. While this test is somewhat subjective, it places a much greater force on the system than is required of the stem clamping force in normal riding.

Item	LB•IN	Nm
Handlebars		
Handlebar clamp bolt, forged stem	150-180	17-20.3
Handlebar clamp bolt, welded stem		
5mm allen wrench	100-120	11.3-13.6
Double clamp bolts, 4mm allen	45-60	5-6.8
Stem expander wedge bolt	175-260	19.8-29.4
Direct connect steerer clamp bolt		
External pinch type	100-120	11.3-13.6
ICON stem w/external bolts	70-90	7.9-10.1
Bar end attaching bolts	85-125	9.8-14.1
Seats		
Single seat attaching bolt w/6mm allen	125-200	14.1-22.6
Double seat attaching w/5mm allen	95-150	10.7-17
Double seat attaching w/4mm allen	35-55	4-6.2
Seat post binder bolt	50-180	17-20.3
Cranks		
Crank arm bolt, Shimano	310-380	35-43
Chainring bolt	50-70	5.7-7.9
Pedal attachment	350-380	40.2-42.9
Shimano cartridge fixed cup	350-608	40-70
Wheels		
Shimano cassette lock ring	261-434	30-50
Derailleurs/Shifters		
Front derailleur clamp bolt, clamp	25-35	2.8-4
Front derailleur clamp bolt, braze-on	44-60	4.9-6.8
Rear derailleur attaching bolt	70-85	7.9-9.6
Front and rear derailleur cable clamp bolt	35-52	3.5-5.9
Shifter clamp bolt	44	5
Combi shift/brake lever attaching bolt	53-69	6-8
Brakes		
Brake lever attaching bolt, standard	44-60	5-6.8
Integrated shift/brake lever attach bolt	53-69	6-8
Brake caliper attaching bolt	69-87	8-10
Cantilever/direct pull brake attach bolt	44-60	4.9-6.8
Caliper brake pad attaching bolt	43-61	5-7
Cantilever/direct pull brake pad attach nut	70-80	7.9-9
Brake cable clamping bolt	50-70	5.7-7.9
Int'national disc brake adapter, outer bolt	95-115	10.7-13
Int'national disc brake adapter, inner bolt	50-75	5.7-8.5
Rotor attachment bolt	40-60	4.5-6.8
Hayes caliper attachment bolt	60	6.8
Hayes lever clamp bolt	15-25	1.7-2.8
Frame Attachments		
Water bottle attaching bolt	20-25	2.3-2.8
Derailleur hanger attachment bolt	50-70	5.7-7.9
Sugar		
Shock mount bolts	133-164	15-18.5
Pivot bolts	95-115	10.7-13
Linkage bolts	50-75	5.7-8.5
Suspension Forks		
Brake boss	60	6.8

Loctite Applications

We use Loctite, or similar product, in a variety of applications in fabrication and assembly of Fisher and LeMond bikes, and components on those bikes. Here's a partial list, and the recommended Loctite product:

Crown pinch bolts	242 Blue
Brake arch bolts	242 Blue
Cantilever studs	242 Blue
Pivot axle bolt, left	290 Green
Pivot axle bolt, right	242 Blue
Pivot bushings, frame/swingarm	290 Green
Shock mount bolts	242 Blue

Use Loctite carefully. Follow the instructions on the package, avoiding contact with your skin, or inhaling the vapors. As noted on the package, Loctite contains a known carcinogen.

For Loctite to work correctly, the parts must be clean and dry, with no grease, oil, or dirt. Loctite Kleen 'N Prime is an excellent cleaner and will reduce fixture time.

With blue 242 Loctite, apply to the threads prior to assembly. It will set up in 20 minutes, with full cure taking 24 hours. With green 290 Loctite, application is recommended after assembly. However, this can be impractical with hidden threads, like on the rear suspension pivot bolts or rear suspension bushings. 290 is set in 3 minutes, and again requires 24 hours for a full cure. Please do not confuse Loctite 290 with Loctite 640, which is also green, as 640 can make disassembly much more difficult.

Highly Recommended Grease Applications

Most threaded fasteners will benefit from the application of a light grease-type lubricant. This prevents corrosion and galling, as well as allowing a tighter fit with a given torque. For this reason, it's a good idea to lubricate almost all threaded fasteners. But some fasteners and parts interfaces really need grease. Here are a few:

- Seatpost/seat tube interface - Grease the seatpost where it inserts into the frame on all aluminum and steel frames (not on LeMond Ti frames).
- Bottom bracket threads - We recommend applying grease to all bottom bracket/frame interfaces, as well as the bearing/cup interfaces. This prevents corrosion and will virtually eliminate creaks, a common complaint among riders with cartridge bottom brackets.
- Stem/steerer interface - Grease the quill of conventional stems where they insert into the fork. With Aheadset type stems, a light oil is recommended, as grease may make it difficult to properly secure this type of stem to the steerer.
- Stem/handlebar/bar end pinch bolts - Any and all of these fasteners are small, so corrosion or galling can really cause problems. Its also critically important to the riders safety that they be correctly tightened. Grease both the threads, as well as the bearing surface of the fasteners which rotate against the fixed part.

Places to Avoid Grease

- With titanium LeMonds, DO NOT grease the seatpost. A fiberglass sleeve bonded into the seat tube prevents corrosion, and any grease may cause the seatpost to slip, even with correct seatpost binder torque.
- Bottom bracket axle/crank arm interface - Avoid greasing the tapered spindle of a bottom bracket, as this may allow the crank arm to insert an incorrect distance onto the bottom bracket spindle. This can cause crank arm clearance problems with the frame, or incorrect chainline with the specified components. A light oil will adequately prevent any unwanted corrosion in most cases.

Sugar Pivot Service

Prepare the bike

1. Clamp the frame upright in a workstand by its seatpost with the head tube vertical.

2. Remove the rear wheel and right crankarm. Disconnect the rear brake and rear derailleur cable.

3. If possible, open the front derailleur cage and remove the chain. Otherwise, remove the rear derailleur..

Remove the rear swingarm

1. Remove the upper link bolt and axle (Fig. 14). Be careful not to let the shock swing down and hit a frame tube.

2. Remove the lower link bolt and axle.

3. Remove the front shock mount bolt.

4. Remove the main pivot bolt (Fig. 15).

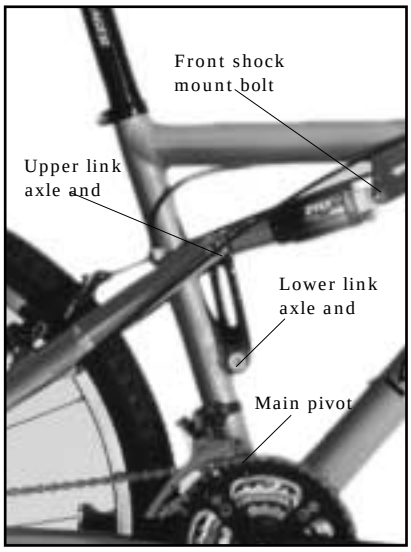


Fig. 14

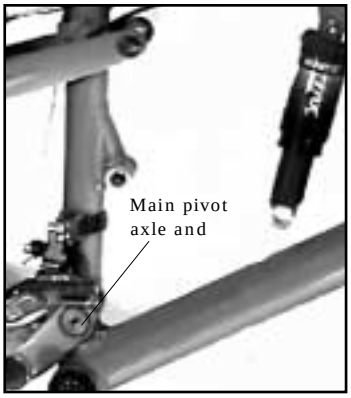


Fig. 15

Separate the parts

1. Remove the main pivot bushing from the frame. This part is held in place with Loktite, so you will probably need to lightly tap it with a hammer to drive it out of the frame (Fig. 16). A socket on an extension makes a good drift. The socket should contact the metal portion of the bushing, barely fitting inside the swingarm and pivot lug.

Do not use heat to loosen the Loktite, as may damage the frame or paint.


Fig. 16

2. Remove the main pivot bushing “top hats” from the swingarm. These are also installed with Loktite, so again tap them out with hammer using a properly sized socket. Avoid damage to the swingarm by properly supporting it as you drive out the bushings.

3. Inspect the bushings from the shock and both linkage axles. If they are in good shape, you can probably leave them. If not, remove them.

These bushings are installed dry, so you should be able to simply push them out. Do not use a screwdriver or other sharp tool, instead try something blunt like an allen wrench. If you use a sharp tool, you may cut or gouge the bearing surface, and this damage would require replacement of the bushing.

Inspect the parts

1. With a clean rag, wipe off all the surfaces. If any part is worn, it should be replaced. Signs of wear on the pivot and link axles are discoloration or a high degree of polish.

Some dark deposits may be left as the bushings and axle ‘seat in’ to each other. When this happens, some of the bearing material is sort of plated onto the axle. Its normal, and actually makes the pivot run smoother.

The bushings are harder to inspect; some discoloration is normal as the bushings and axle ‘seat in’ to each other. If wear looks uneven or non-concentric, its best to

replace them.

Note: When in doubt, throw out old parts. Its relatively cheap to replace the parts, and time consuming to perform a rebuild. You do the customer a favor by only tearing their bike apart once.

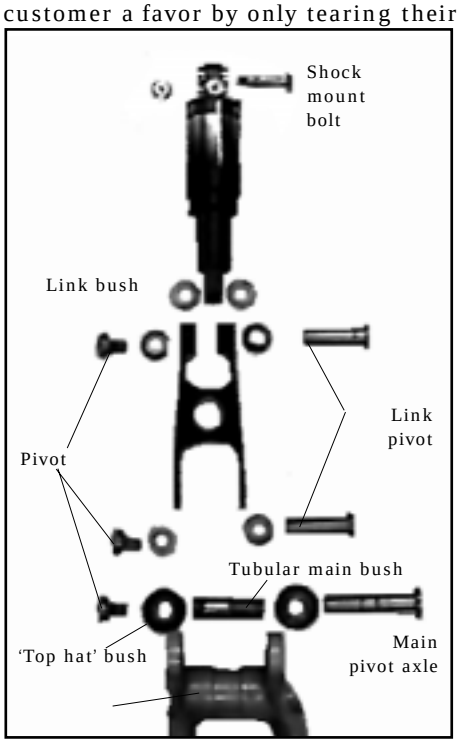


Fig. 17

Prepare the parts for reassembly

1. Clean the bonding surfaces of the bushings and frame. These surfaces include the outside of the tubular main pivot bushing, the seating surfaces of the main pivot 'top hat' bushings that go into the swingarm, and the parts of the frame and swingarm that the bushings contact. These surfaces should be cleaned with Loktite Kleen 'n Prime.

Be careful no to get Kleen n Prime on the paint or bushing material. It will remove paint, and also remove the lubrication in the bushings.

2. With the other bushings, simply wipe clean of dust or other debris.

3. Do not lubricate any bushings.

4. Clean the pivot and link bolts with Kleen n Prime.

Install the main pivot bushings

1. Check the fit of the bushings in the frame and swingarm by dry-assembling them (practice installation, but without Loktite). Normally the bushings are a light press fit, meaning they are snug but easily go into place with hand pressure. If the parts fit correctly, go to Step 2. If they seem very loose, go to Step 3.

2. If the parts fit correctly, apply Loktite 290 to all contact surfaces between the bushings and the frame or swingarm, and install the bushings.

3. If the parts seem very loose, Loktite RC680 is required. 290 is a thread locker, and it works best where parts are in tight contact. RC 680 is a filler, so it has the ability to fill larger gaps and securely bond parts that do not fit tightly together.

4. After installing the bushings, wipe off any excess Loktite, particularly removing any Loktite that contacts the bearing surface.

Install the main pivot axle.

1. Carefully align the swingarm with the main pivot of the frame. The fit is tight. Avoid contact between the bushings and any residual Loktite.

2. Align the swingarm and install the main pivot axle (the long one) from the right side of the bike. Slide it all the way through the frame and swingarm eyes.

3. Apply Loktite 290 to the threads of the pivot bolt, and install the bolt from the left side of the bike. Tighten to 61-75 lb•in (6.9-8.5Nm).

Install the link bushings

1. The bushings supporting the link, the swingarm link pivot, and rear shock are all installed dry. Simply press them into place, being careful to keep them aligned during insertion.

Install the lower link pivot axle.

1. This axle goes through the link and the frame. Make sure the link is oriented in the way you'd like it (note printing on the side, etc.). Insert the lower link axle from the left side of the bike.

2. Apply Loktite 290 to the threads of the pivot bolt, and install the bolt from the right side of the bike. Tighten to 50-75 lb•in (5.7-8.5 Nm).

Install the upper link pivot axle.

1. This axle goes through the swingarm, link, and rear shock. Make sure the shock orientation is how you would like it. Insert the upper link axle from the right side of the bike.

2. Apply Loktite 290 to the threads of the pivot bolt, and install the bolt from the left side of the bike. Tighten to 15-20 lb•in (1.7-2.2 Nm).

Install the shock mount bolt.

1. Insert the shock mount bolt.

2. Apply Loktite 290 to the threads of the pivot bolt, and install the bolt from the right side of the bike. Tighten to 61-75 lb•in (6.9-8.5Nm).

Allow to Dry

Loktite normally requires 24 hours to full set. During this time, the bike should not be ridden. Do not compress the suspension or in other ways disturb the Loktite until is has fully set.