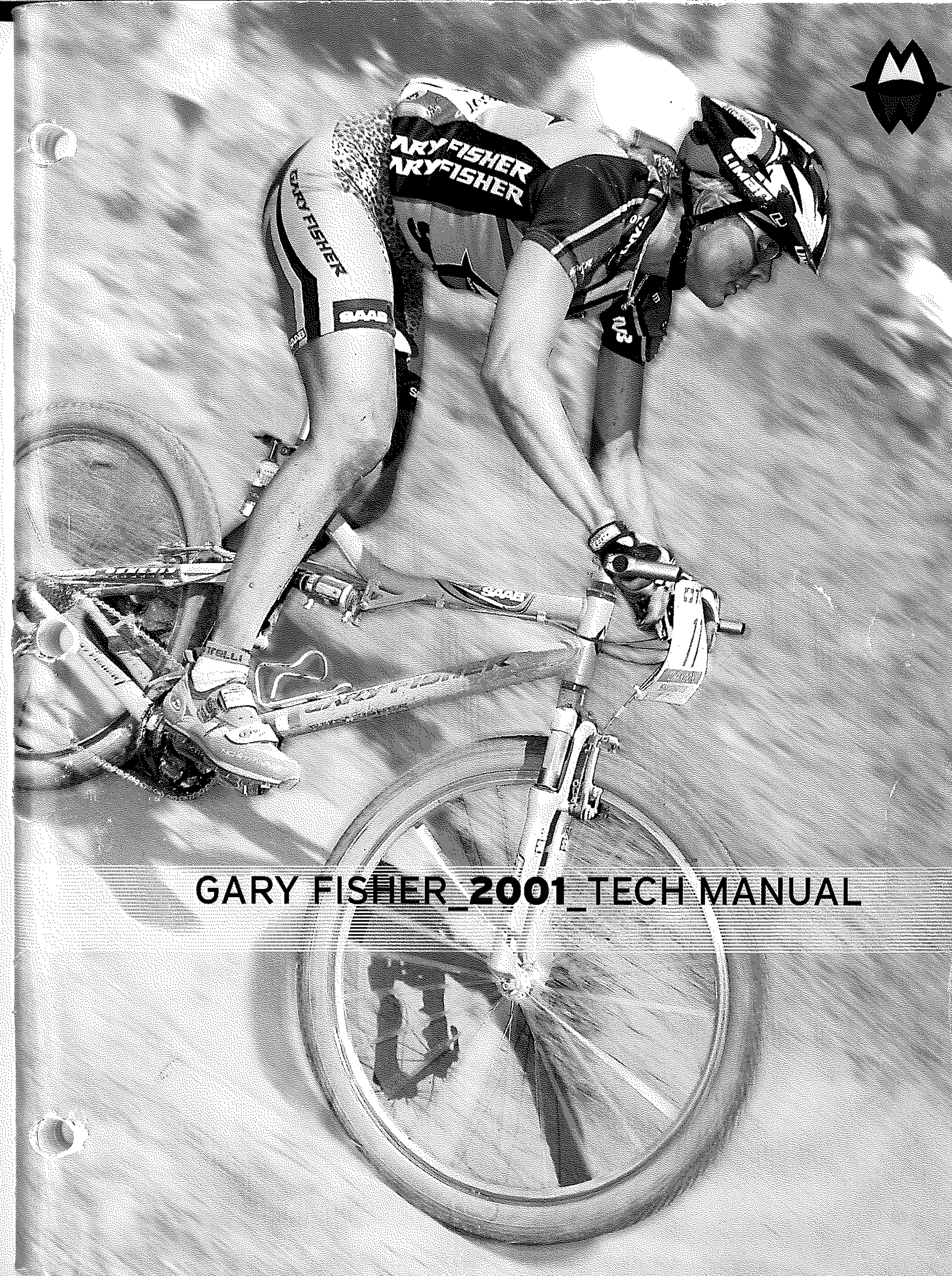

GARY FISHER_2001_TECH MANUAL

GARY FISHER BICYCLES

The First Name in Mountain Biking

TECHNOLOGY STORIES

BIKE SALES INFO, GEOMETRY, AND SPEC

FOR THE MECHANIC

GREG LEMOND RACING CYCLES

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BIKE SALES INFO, GEOMETRY, AND SPEC

FOR THE MECHANIC

Comparing materials

Material science is complex

When comparing materials, it's a mistake to only consider one of the many properties that define a material. Every property must meet the needs of the structure you want to build. Ideally a bike should have a blend of stiffness and strength that make it light with good feel. It should last a long time. It needs to be economic to manufacture.

There are other considerations as well. In some cases, one material works best for a certain part of the bike, and in other areas another material might be better.

In the bike shop, materials discussions have usually all been theory and laboratory testing, assuming pure alloys and flawless construction. The reality of bike frame durability has been a little rockier. As frames built from high tech materials have become available at a wide range of price points, the variation in quality has become equally wide. As an example, even as much as we like aluminum, we would much rather ride a medium quality steel frame than a poorly designed and manufactured aluminum frame. In other words, the material is not nearly as important as the design, engineering and construction of the bike frame.

Nonetheless, people want to see how things compare, so the following charts should help. Please remember that this data is derived from laboratory tests using solid blocks or rods of material. They do not tell how strong, stiff, fatigue resistant, or heavy a structure might be when built with that material. In other words, an aluminum bike can be made to be harsh and stiff, or soft and compliant. It can be robust and strong, or fragile. It's what the designer and manufacturer do with the material that counts.

What is the best frame material?

When you say the "best", there is a need to quantify what is meant. A given material is rarely the best at everything. It's a combination of features which puts it in the lead for a bicycle frame that meets YOUR needs. Consider the following (short) list, rated by weight:

Great ride feel: Highly subjective, depending on the 'feel' you're looking for.

Light weight: With a given frame strength, aluminum is lighter than steel and titanium, heavier than carbon

Power Train Efficiency: Aluminum is better than steel, titanium or carbon

Fatigue strength: Carbon is followed by titanium, aluminum is better than steel

Impact strength: Steel is best. Aluminum is better than carbon or Titanium

Yield Strength: Carbon is the best. Aluminum is better than steel or titanium

Corrosion resistance: Titanium is best. Aluminum is better than steel, competitive with carbon

Cost: Steel is best. Aluminum is better than titanium. Carbon is worst.

Are all bicycles of a given material the same?

Most of the high performance bikes sold today are aluminum, so for this discussion lets focus just on this one material. There is a huge difference in ride between even an above average aluminum bike and the best. Hopefully you are learning a bit about materials and see where it's possible for two bikes with the same geometry and material to have huge differences. Every step, from the alloying of the metal to heat treat and finish will provide opportunities for a manufacturer to add quality or save cost. Although the reputation of a brand is usually earned, you simply have to ride the bike to feel the difference.

We have chosen the best materials and then taken every opportunity to maximize the potential of the material we use. We know that different materials can be made to do different things. We have designed our bikes accordingly to provide a different 'feel' and level of performance, or a similar feel with different materials. As an example, LeMond road models have the same geometry, are built from three different materials, and share many ride characteristics. On every frame, we have maximized the performance of a given model by choosing the most appropriate materials or designs for that bike.

Modulus

Stiffness of a material is referred to as "modulus" (Fig. 1). This is the ability of a material to resist deflection under load. In laymen's terms, the material has a force applied to it, and it's flex is measured.

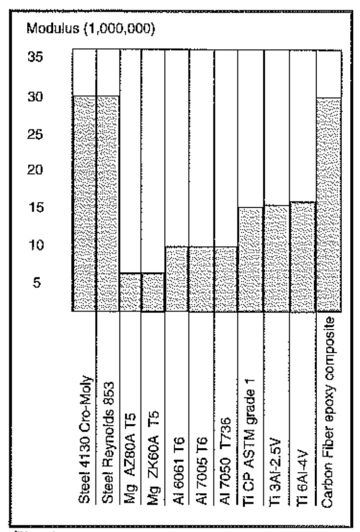

Fig. 1

A bicycle needs to resist flex as you push on the pedals. If the frame is rigid, your pedaling energy turns the rear wheel and the bike goes forward.

If the frame flexes, it works like a spring. Some argue that since a spring returns virtually all the energy applied to it, nothing is lost. However, consider that many exercise machines work like springs. When pushing on the machine you get very tired. But you don't go anywhere.

An important note here is that in some cases, a certain amount of flex is desirable. As an example, an overly rigid bike can cause you to fatigue. If the riding surface has bumps, either you or the bike must react as the wheels roll over those bumps. If you expend excessive energy reacting to the riding surface, you can tire prematurely. Instead of using your energy to pedal, you must use it to control the bike. In this way, a frame that's too stiff can actually slow you down.

Tensile strength

The strength of a material is usually described by the tensile strength (Fig. 3). Tensile refers to the amount of force required to separate (pull apart) a solid section of material of a given dimension.

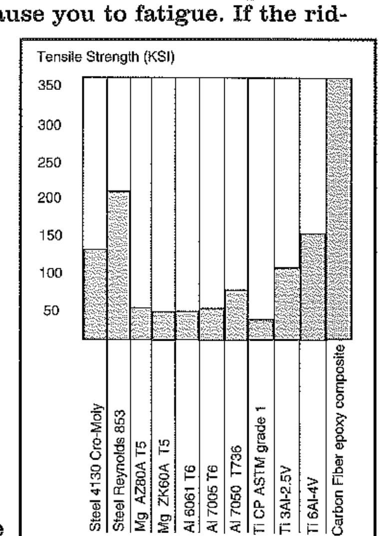

Fig. 2

In other words, a certain size of material is pulled apart until it breaks. The size, or cross section, is important because a greater cross section means more material. Think of it like this; if a steel wire can hold 5 pounds, and you braided 100 steel wires together into a thick cable, how much would the cable hold?

While it's rare to see a bike frame that has been completely torn, it's because the frames are designed to resist such force. The key to resisting the force is to use enough material. And since more material makes a bike weigh more, the tensile strength of the frame material ends up partially defining the weight of the bike.

Yield strength

The force required to permanently deform a material is it's yield strength. In layman's terms, this is the force it takes to bend the material to the point that it stays bent. It's the bending strength.

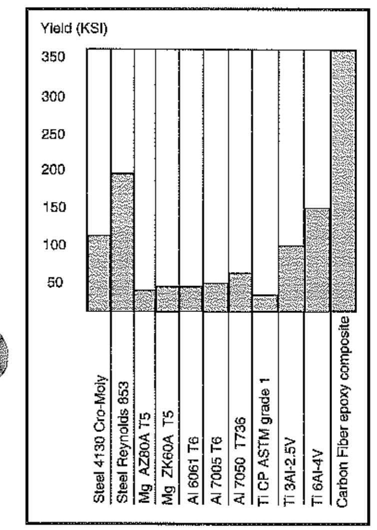

Fig. 3

When a frame is permanently bent, the bending could thin the material, or create a stress riser. Without testing, it's pretty hard to determine how much damage has occurred as the frame yielded. We don't know how much strength remains. For this reason, once a frame or fork is bent, it no longer is considered safe to ride. Like with tensile strength, the yield strength of a structure can be enhanced by using more material. Yield strength is also influenced by the design of the structure; simply put, if a frame is stiffer it resists bending better.

Fatigue strength

Forces applied to the bike which flex it, but do not permanently bend it, can still break the frame. The ability to resist these forces is fatigue strength, also know as fatigue resistance.

Microscopic flaws inherent in all metals can grow into microscopic cracks, and these tiny cracks can eventually grow and lead to tubing separation of a bike frame. Carbon composites have an almost infinite fatigue life. However, if not of top quality, carbon may also exhibit fatigue.

Density

The weight per unit volume is the density (Fig. 4). Density is important in bike frames, because it's somewhat reflective of weight of the structure. However, it's especially important in discussing bike frame materials, since many of the mechanical characteristics are based on cross section, not weight or density. While steel has greater tensile strength than aluminum, its density is about 3 times greater. If fatigue strength compared weight instead of cross section, aluminum would be stronger. Sometimes these mechanical values are rated considering density, and in these cases are referred to as 'Specific', like 'Specific Modulus' or 'Specific Tensile Strength'.

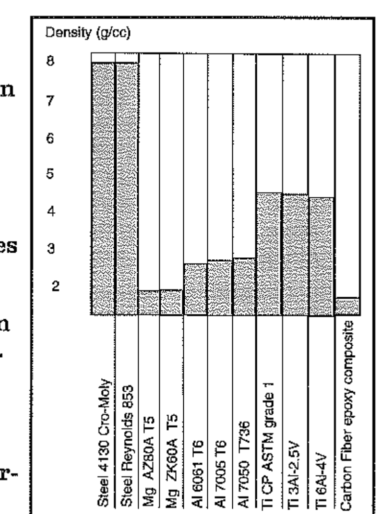

Fig. 4

Elongation

With most metals, the yield strength is well below the tensile strength. At the yield point, the frame is deflected with enough force that it becomes permanently bent. As a metal is yielded it becomes stretched, or elongated. During the elongation, the material is absorbing energy. If the elongation of the metal is exceeded, the metal breaks (Fig. 5). A large amount of elongation is viewed by some people as a safety factor when designing with that material. In other words, if a material has a lot of elongation, it can be built closer to its required yield strength. It can safely be made with less material, and thus lighter.

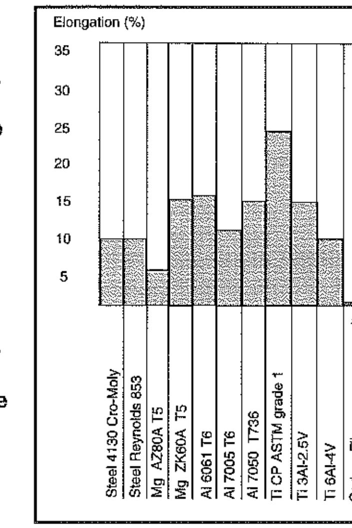

Fig. 5

Some materials have virtually zero elongation. In other words, the yield strength and the tensile strength is virtually the same. The people who expound the benefits of elongation point out that carbon fiber is in this group, and we use carbon fiber on some models of Sugars. However, a good designer can accommodate any mechanical property. To avoid any problems which might be exhibited by carbon's inability to stretch, we simply make our carbon stays to be much, much stronger than any metal stays of comparable weight.

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 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.

Titanium Alloys

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 oxidization. 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. 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.

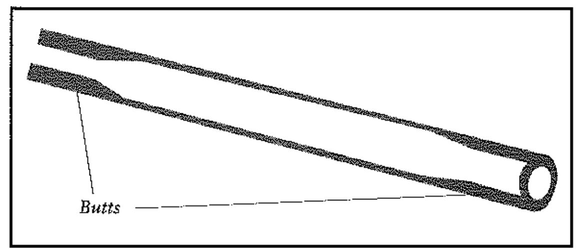

Fig. 6

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

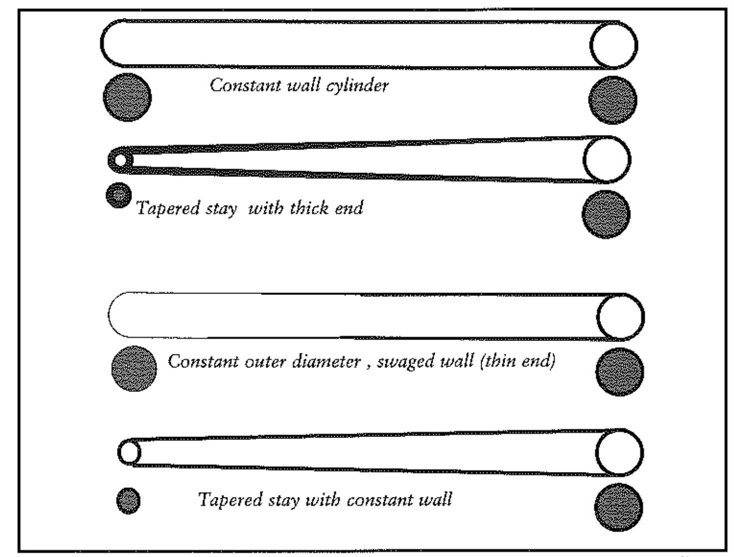

Fig. 7

Most titanium bikes use constant diameter, constant thickness stays. 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). This is the cheapest way of doing it.

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 thinner. 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.

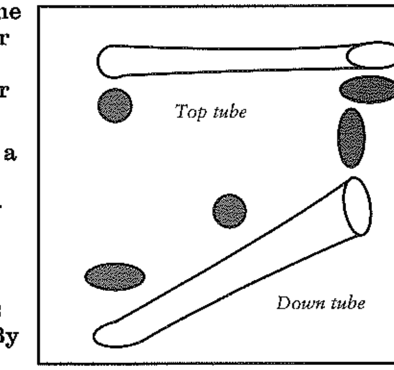

Fig. 8

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.

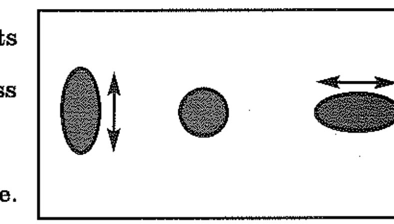

Fig. 9

Even the top tube gets this treatment. The widened front of the top tube increases the lateral stiffness. It also allows the frame to 'splay' more. In other words, the front of the bike can flex a bit fore and aft, adding shock absorption. This flex is not soft enough to react to pedaling forces, but does show up when the front wheel hits a bump, providing extra comfort at both the handlebars and saddle. It's a small detail, but in a long stage race small details add up to overall wins.

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.

But no seat post grease

Our design eliminates corrosion concerns with the most critical frame fit detail. We have bonded a composite insert into the top of the seat tube. Do not grease the seat post on LeMond titanium frames, or you may not be able to adequately clamp the post. If someone inadvertently uses grease here, a little degreaser on a rag should allow you to remove enough of it to again clamp the seat post securely.

"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.

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.

Doesn't steel resist fatigue better than aluminum?

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.

A high strength steel alloy will exhibit a longer fatigue life at a high, fully reversing load level. But remember, these numbers always reflect performance for a unit volume. Steel weighs 3 times as much as aluminum for the same volume. In other words, if these statistics were based on weight instead of volume, steel would have to exhibit 3 times the fatigue strength of aluminum to be considered stronger, and it doesn't. Steel is only the better material if you don't care how much your bike weighs.

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. Contrast that to steel, where the same cubic inch weighs three times that amount. You can use twice the volume of metal that a good steel frame uses and the steel frame will still weigh 50% more than an aluminum frame. 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. Silver series frames are sometimes 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. 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 6061 T6. They are built and painted in Wisconsin. In addition, Platinum frames have butted tubing, which reduces their weight and further enhances their ride.

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. Its inexpensive to make steel, and its 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.

Its got the feel

Over the last century, a huge number of steel bikes have been built. The early ones were ordinarys, or highwheelers. 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, its 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 the same cubic inch of tensile steel.

However, these is 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 times 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 its 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. Instead of a 135mm stem, Gary had to use a 75mm stem. 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, its 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, its 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 its 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 the rider needs 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 the rider. This is useful when the rider transfers from a seated to a standing position. As the rider moves from a seated to a standing position (or the opposite), they do not have to move as much to maintain traction. It becomes easier to 'attack' a climb.

Who's it for?

The features of Genesis geometry were dreamed up by Gary Fisher, for his own riding. As we point out in "Gary Fisher: A History" on pages 24 and 25, 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 the rider on the bike, and their center of gravity. With the rider 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 Greg found that feeling fresh was more useful than a stiff bike when sprinting for a stage win.

- 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, its 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 the rider 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 the rider 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 the rider. Since gravity does not increase, it requires additional opposition from the hands to keep the rider still in the saddle. Rather than move the hands (and handlebars) to oppose the feet, the saddle is moved back so that the bars are further away. This position improves the opposition of the hands to the force of the 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 the 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 a rider requires a very forward saddle position, they 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 the rider's 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 the rider expends less energy as they 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 bike and rider (some call it a feeling of 'one-ness' with the bike) means LeMond bikes don't require extra vigilance from the rider.

Women on Bikes

Most bikes are built for men

For years women have been riding bikes designed partly, if not totally, for men. For the lucky ones, their dealer substituted a few parts which made their men's bike work pretty well for a woman, especially in larger sizes.

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. On a small bike, the stem is likely to be quite short. 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 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 mens 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 engineers addressed these issues in several ways in the Genesisters geometry. To support their wider pelvis, women tend 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

A rider pedaling a bicycle touches the bike in three places; pedals, saddle, and handlebars. For the bike to fit 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 this 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".

Average rider- 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.

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 45 degree angle. Lowering the bars, or changing the parts, changes the fit of the bike as well as its Rider Height.

A well fitted bike sells

We noticed a dialogue on an internet newsgroup that tells a great story. 'Mark' wrote:

<<Half the shops told me that "fit" was important, but then just "sized" me by sight and plunked me on a few bikes to try without making any adjustments whatever. A couple shops put me on bikes that I think were clearly too small. Then I went into a shop that appeared to be the most "bohemian" of the lot and "bingo," the guys spent a lot of time with me. They measured my arms, legs and torso, had me climb on a number of bikes and adjusted the saddles on each, tweaked the brakes and gears and explained the bikes before I took them for a ride.>>.

Mark wants to make sure the bike fits before he plunks down his hard earned cash. Even though he saw the same bike at another shop, he is going to buy a bike from the shop that fitted him. He sees good bike fit as an important part of his purchase.

Last year, the Fisher Sugar set the suspension market on its ear. No bike before it offered the combination of Genesis handling and B*link technology. The Sugar is a lightweight full suspension package that handles like a hardtail. Its a successful blend of several Fisher features; Genesis Geometry, Aluminum frame technology, and American manufacturing quality.

Although the Sugar is only a year old, it 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 the rider's energy. Everything a perfect full suspension bike should be, so even on an afternoon spin, the Sugar makes 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. For a list of Genesis features and a more complete discussion, see pages 9-10.

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, 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. If pivots aren't perfectly aligned, they wear prematurely, so the extra alignment work adds cost to the bike.

Their 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, our 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. For this design, we used some space age 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.

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. The spring of a coil/over shock, by itself, 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 later on. 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 proven Joshua bikes; 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)?

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 combo of features means you can ride a Sugar for thousands and thousands of miles without any maintenance.

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?. First, as you ride your Sugar, the composite bearing deposits material onto the nickel-less anodized pivot axle. 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.

Sugar suspension setup

With a RockShox SID rear shock-

SID shocks have two springs; the main spring extends the shock and resists compression. The negative spring works to compress the shock during its first few millimeters of travel, giving the shock a plush feel that's sensitive on small bumps.

In the SID main chamber, pump up the pressure to be equal in PSI to half your body weight in LBS.

In the SID negative chamber, use about one half that pressure.

Smaller riders sit further ahead on the bike than taller riders. Sitting further ahead of the pivot, smaller riders don't apply as much leverage to the shock. For this reason, they may benefit from slightly more pressure in the negative spring.

To adjust the damping, try 2-3 clicks 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.

With a Cane Creek rear shock

Cane Creek shocks also have two springs, and they work similarly to the RockShox. The difference is that the Cane Creek is self-adjusting.

With a Cane Creek rear shock, pump up the pressure to around 25-35 PSI less than your body weight in LBS.

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.

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, 2001 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.

Disc Brakes

New for bikes

A few years ago, disc brakes were an oddity in the bike industry, mostly isolated to a few odd downhill bikes. Today there are many brands and models of disc brakes on the market. While this proliferation has some benefits, the relative youth of this portion of the industry also has led to some myths as well as some really lousy product making a bad name for some really excellent brakes. Here we will try to cover some of the important issues you should know when selling disc brakes, but our remarks will be addressed to the good brakes; those we have chosen for specification on our bikes.

Disc brake benefits

The main focus on most marketing of disc brakes is stopping power. It's true that good disc brakes stop really well. But so do good V type brakes. There are a lot of other benefits from using disc brakes, and we'll list a few of them here.

Disc brakes work in pretty much all conditions. They don't seem to mind wet, mud, or even snow. Certainly these conditions can degrade their stopping performance, but not to nearly the degree that a rim brake will suffer. If you are anticipating wet or snow, or simply an occasional creek crossing, you can get almost the same stopping power with wet discs as dry.

Disc brakes are easy to adjust. And they are not very sensitive to the quality of adjustment. Although adjustment was more of an issue with cantilever brakes than V type brakes, there can still be a loss of performance with a V type brake if it is not set up correctly. Due to the way they work, and their small tolerance for misalignment, it's hard to set up a disc brake so it won't work right.

Disc brakes have little fade. When rim brakes are used hard, the heat generated by the rim-pad contact tends to degrade their stopping power.

Heavy use doesn't require constant cable barrel adjustment. With rim brakes in high wear conditions, sometimes you will have to adjust the brake cable barrel adjusters several times on a single ride. You may even have to use an allen key to re-adjust the cable length. With a cable actuated disc brake, it only takes a few turns of the adjuster to go from brand new to completely worn out pads. With a Hayes full hydraulic brake, pad adjustment is automatically adjusted simply by opening and closing the lever.

Common rim brake problems can be avoided because disc brakes are hard to set up wrong (at least without knowing it). As an example, a poorly set up rim brake can dive under the rim. Worse yet, as the pads wear they can slide above the rim and wear a hole in the tire sidewall.

Disc brakes do not wear the rim. With rim brakes, it's just a matter of time before the rim wears out and has to be replaced. This is especially true with off road bikes ridden in wet conditions, but even happens to bikes ridden exclusively in the desert.

Wheel requirements for disc brakes

Rims on disc brake wheels can be designed to be lower weight. Since the rim no longer needs braking flats, the rim can be made trimmer. Also, the rim designer does not have to anticipate the loss of strength as the pads wear away the rim material.

Disc brake wheels need to have spokes tangential (or close to tangential) to the hub. This allows transfer of braking torque from the hub to the rim and tire.

Disc brake wheels need heavy duty quick releases. Lightweight quick releases may not provide adequate clamping force. As the brake is applied, the wheel will try to rotate around the disc brake pad. Under heavy loads, this force is significant. Should the rotational force exceed the clamping force of the quick release, it could be possible in some cases for the wheel to be pulled from the dropout.

Spacing/bolt pattern information

We saw the advantages of disc brakes early enough to add disc brake mounts to many framesets before the disc brake market was fully mature (not that it is now, but it's a lot closer). Unfortunately, those early mounts may not accept some of the newer brakes. Our newer designs are moving to what's being referred to as the "International standard" which places the brake attachment bolts for the front and rear brakes perpendicular to the bike centerline, or parallel with the wheel axles. In some cases it will be necessary to use an adapter to mount the brake to the frame or fork. Make sure the adapter you use correctly positions the brake on the rotor so the pads make full engagement of the rotor, and that the rotor does not contact the caliper body (through correct selection of the rotor outside diameter). Usually this is best accomplished by using the rotor supplied by the brake manufacturer. If you choose to intermix brake and rotor brands, pay attention; they do vary!

This new standard also dictates the bolt hole circle for the rotor/hub attachment. We were already using the 44mm rotor bolt BCD. The last fit issue is the spacing from the centerline of the bike. Our hubs have either conformed to this standard, or we have offered adapters to meet it.

Use caution with disc brakes

With every new technology, there is a learning curve. Make sure you are aware of the issues, and discuss them with your customers. We have included this information in the bicycle Owner's Manual, but you should still try to discuss it with your customer.

Disc brakes get hot. Very hot. After a hard stop, the disc brake rotor can get up into the 300 to 350 degree (F) range.

Avoid rotating parts on a bike, like disc rotors. The rotors are steel, and quite unforgiving should you insert a finger into one while the wheel is spinning.

Make sure all disc brake bolts are tight. This includes brake attachment bolts, brake adapter bolts, and rotor attachment bolts. It should be obvious that loose bolts would not be a good thing.

Make sure the brakes, adapters, and rotors are installed with the correct length of bolts. This is especially a concern when using spacers between the rotor and the hub. Make sure the bolts have adequate engagement in the hub. Not only are short bolts more likely to loosen prematurely, they could potentially strip the hub threads.

Keep the brakes clean, but avoid getting cleaning material on the pads. Chain lube or other common chemicals used on bikes can contaminate the pads such that the brake will squeal or lose stopping power. Should the rotor or brake pads become contaminated, the only solution may be to replace both the pads and rotor. Before you do so, try using isopropyl alcohol as a cleaner. DO NOT use degreaser or other cleaning agents containing petroleum. Hydraulic fluid can also contaminate the brake. Any time you are going to clean the bike or bleed the brakes, make sure the wheel is removed, and also remove the brake pads.

With rim brakes, pad wear is usually easy to see, even from a distance. This makes it easy to monitor pad wear. With a disc brake, the pads are inside the caliper, so they require a little more vigilance. Replace disc brake pads if they are less than 1mm thick.

A few words about new brakes

When a disc brake is brand new, it's likely that they will not stop really well. This is because the rotor is steel, and the new brake pads do not exactly conform to the smooth surface of the rotor. As the brakes "burn in", pad material is transferred to the rotor on a microscopic level. As this occurs, the brake pads will wear to exactly match the surface of the rotor. Also, pad material will be embedded in the rotor, and the coefficient of friction goes way up.

Before providing a test ride on a bike with new disc brakes, explain to the customer that full stopping power will only happen after a dozen or so hard, hot stops have fully burned in the rotor and pads.

During this burn in time, it's best to avoid wet weather riding which may impede the burn-in process.

Cable operated mechanical disc brakes

The new generation of cable operated, mechanical disc brakes work really well. They can be tuned to provide good feel and modulation, and meet the expectations of riders who are accustomed to rim brakes in regards to feel and lever travel prior to pad contact. They can even be made to match the feel of a V-type brake used on the rear, if so desired. However, even though the two feel the same at the lever, the mechanical disc brake will stop better once the rotor is burned in.

So if they feel the same, what's the benefit? The disc brake will stop better, works in all conditions, is easy to adjust and maintain adjustment, and does not wear the rim.

Full Hydraulic disc brakes

The full hydraulic disc brake is the most powerful of the brakes we spec. This extra power exists even when the rotor and brake pads are identical between a mechanical disc and hydraulic disc. It's thought that the difference is mostly cable friction and housing compression. It probably also is the result of differences in mechanical advantage, and the need for return springs on the mechanical brake.

Some experienced riders do not like the feel of full hydraulic brakes due to their very short lever throw. People experienced with motorcycle brakes say this is how brakes should be. Why the difference? With a rim brake, it's necessary for the brake to open a large distance for the rim to allow debris or mud to pass by, or to allow an out-of-true wheel to rotate freely. With a disc brake, these are not issues. So instead of wasting time moving the lever a long ways prior to pad contact, a full hydraulic brake gives almost instant response. They still offer reach adjustment, so the lever can be adjusted so the stopping power is applied where the hands have the most strength.

Some riders object to full hydraulic brakes because they simply do not understand them. They have a comfort level with the traditional brake cable and housing. For these riders, it's important to explain that hydraulic brakes do not have to be bled all the time. Bleeding is normally only necessary when the fluid has been degraded due to heat over a period of time, which on a bike would normally be several years. And actually the whole bleeding procedure is fairly simple. Also explain that the brake hose is very durable.

Lastly, if the extra stopping power isn't enough of an advantage, full hydraulic brakes are actually lighter than most cable operated disc brake systems.

Bicycles have traditionally used a steerer with 1” outer diameter. The development of this standard was so long ago that we don't know exactly how it came about. We suspect it was largely happenstance. At any rate, the 1” steel steering column came in at a reasonable weight, and it proved to be fairly robust for the riding styles of the time.

In the late 1980's, mountain bikes began taking over the sales floor. These bikes were ridden in much harsher terrain, often off road. Riding over rocks, logs, and in rough terrain put a great deal more stress on the steering systems of these bikes. An innovator of bike designs, Gary Fisher, came up with the idea of increasing the diameter of the steerer to add strength. Along with this improvement, larger diameter headsets provide more bearing surface area for longer bearing life. Frames would also benefit from this change. They would use larger diameter tubing, and the larger joining areas at the head, down, and top tubes increased the strength of these critical frame joints. Although the original Fisher Evolution $1^{1/4}$” steering size was bypassed, an oversized standard of $1^{1/8}$” was almost universally adopted for mountain bikes by 1991.

Stronger frames resulted from the new $1^{1/8}$” mountain bike standard, but it was at a price. Additional material was required for the larger head tube, steerer, headset, and stem. This added weight to the bike. Road bikes designers stayed with the 1” steering system to avoid the weight penalty.

Over the last decade, new materials technology has flooded the road bike racing market. These materials, notably aluminum, titanium, and carbon fiber composite, allow a much lighter frame and fork while maintaining the strength needed for riding. Larger diameter tubing allows frames built with these new materials to provide similar frame stiffness to steel. However, there were problems using the new materials in the fork steerer. A 1” aluminum or carbon steerer is not as stiff as a steel steerer.

Furthermore, cutting the required headset threads in either of these materials weakened them to the point where they were not usable. So while bikes built with exotic materials became popular, these new bikes continued to use forks with 1” steel steerers.

Oversize is the key

One problem of the new materials is that they require additional volume. It takes a greater volume of aluminum to get the same stiffness and strength as steel. In the 1” format, lighter steerer materials required so much material there was little weight loss in a safe fork.

Stiffness is also an issue. Stiffness effects fatigue resistance. In addition, an overly flexible fork decreases steering accuracy. Neither aluminum nor carbon composite is as stiff as steel per unit volume. Only by increasing the diameter of the steerer could these new materials provide the stiffness needed.

In addition, the technical issues have been ironed out. The Aheadset system does not require the steerer to be threaded, instead adjusting the headset bearing with an internal compression system (starfangled nut). The oversize headset system on road bikes allows a large diameter aluminum steerer which produces similar stiffness and strength of a 1” steel steerer. With this new design, there is actually a weight reduction.

What does all this mean?

A 1” aluminum steerer is more flexible than a CrMo steerer of the same weight, and not as strong. A carbon fiber steerer could be as strong but would still be more flexible, with a loss of steering control.

As a solution, our new ICON Air Rail OD fork uses an 1 1/8” steerer of 6061 T6 aluminum alloy. This new fork has the same strength, stiffness and fatigue resistance as our earlier 1” CrMo version, but is 125 grams lighter.

For 2001, the LeMond steel and titanium models have the new 1 1/8” steering system.

Rolf wheels set a new standard in wheel performance with patented Paired Spoke Technology (PST). Paired Spoke Technology means Rolf Wheels are light, fast, and rock solid. Rolf Wheels solve all of the problems associated with conventional low spoke count wheels:

- Inherent radial and lateral rim deviations
- Truing difficulties
- Short fatigue life of rim and spokes
- Performance robbing weight increases

The key is the patented Rolf Paired Spoke Technology. Lateral force at the rim, generated by the spokes, is perfectly balanced with Rolf wheels. This has many beneficial effects for bicycle wheels.

Rolf wheels have reduced spoke fatigue

As the wheel turns with a rider on the bike, your weight presses down on the rim, and in turn, the ground presses the rim up toward the hub. As this happens with a conventional low spoke count wheel, the spoke at the ground is detensioned (Fig. 10). As the wheel rotates further, it is tensioned again. This cycle of stress and release may create spoke fatigue which can eventually lead to spoke or even rim failure. With Rolf wheels, the spokes are much more highly tensioned, and they're in pairs. Since the spokes are more highly tensioned, they lose less tension as they are released. They also share the load, effectively cutting it in half, so the tension change is less. With less tension change, the fatigue inducing cycle of loose-tight-loose-tight is greatly reduced. The result is less fatigue on both the spokes and the rim.

Rolf wheels have no rim wobble

Another effect of conventional low spoke count wheels is that as each spoke has its tension released at the bottom of the wheel, it allows the rim to move slightly out of true, so the wheel does not track straight (Fig. 10). With Paired Spoke Technology, the rim runs straight because the pairs of spokes do not exert unbalanced force on the rim.

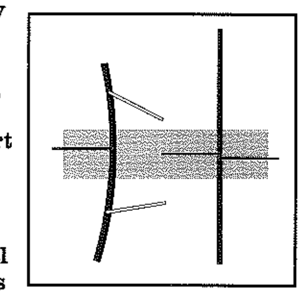
Fig. 10

When the rim runs straight on the ground, the wheel is more efficient. With less lateral wheel flex, the whole bike feels more solid. Don't confuse the solid efficiency of Rolf wheels with loss of comfort. The sensations of a laterally flexing wheel may fool you into thinking they are adding comfort, but that's not reality. The fact is that the rim has very little vertical displacement in a well built wheel. Wheel comfort comes primarily from the tire.

Rolf wheels stay true longer

Still another effect of the cycling of spoke loads is that as a spoke is detensioned, the nipple loosens. The cycling of spoke loads is a major contributor to wheels coming out of true. A rider may not feel the efficiency of a Rolf wheel, and spoke fatigue may take years to cause problems, but every rider will appreciate that Rolf design means less wheel truing and maintenance.

Rolf wheels attack this problem in three ways. First, Paired Spoke Technology allows higher spoke tension. With conventional low spoke count wheels, over tensioning can cause rim failure. With the higher tension possible in a Rolf wheel, the nipple has less change to get loose. Second, Paired Spoke Technology means that spokes share the load at the bottom of the wheel so each spoke sees less tension change as it's loaded. This keeps the spokes from being loosened as much as conventional spokes. Third, the lowest spoke count Rolf wheels, Vector Pros, use a custom alloy spoke nipple with a nylon insert to prevent loosening.

Left hand torque transmission

The reason Rolf rear hubs have their unique shape is to allow torque transmission to the non-drive side spokes. With a conventional hub, all torque is transmitted solely through the right hand, drive side flange. This is why many low spoke count wheels use radially laced spokes on the left side. But let's do a spoke count. If only the drive side spokes transmit torque, and only half those spokes are pulling, then only 1/4 of the spokes in a conventional rear wheel carry all the torque loads for the wheel. For a 32 spoke wheel, that's just 8 spokes. You can do the math on those other low spoke count wheels.

But on Rolf wheels, torque is transmitted through both the left and right flanges, so 1/2 the spokes carry the torque. In other words, a 16 spoke Rolf rear wheel has as many spokes transmitting torque as a 32 spoke conventional wheel. And each of those Rolf wheel spokes is paired so there is no lateral rim deflection and the Rolf wheels are more efficient!

There are three things required to accomplish this feat. First, the hub must be stiff enough. Rolf hubs use a large diameter barrel with increased wall thickness. This creates a very stiff structure. Second, the spokes must be laced tangentially. A spoke laced radially cannot transmit torque, but instead allows the hub to 'wind up' relative to the rim when torque is applied. And last, the left flange must be larger than the right. In this way, the left spoke is moving in a larger circle and therefore leads the right side spoke. This may all sound a bit strange, but we have instrumented Rolf wheels with strain gauges, and the data supports the theory.

Other Rolf Details

The details of Rolf wheels actually go deeper than this. As an example, Rolf looked at other factors leading to premature parts failures in wheels and addressed them. All Rolf hub flanges have been specially designed with extra thick flanges to better support the spoke bend, reducing fatigue. Spokes in Rolf wheels have specially designed heads to eliminate the most common area of fatigue, the transition from the spoke shaft to the head. Prior to Rolf's analysis of this issue, a spoke went from a cylindrical shape to a cone in one sharp angle (Fig. 11). Rolf had spokes specially made with a smooth flare, removing the large stress riser created by the abrupt transition found on other spokes.

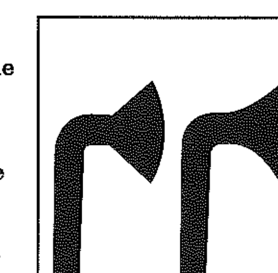
Fig. 11

Why not 'Straight Pull' spokes?

Some theorized that a straight pull spoke would remove the need for a spoke head altogether, but Rolf looked at the way a wheel 'winds up' from drive torque (or disc brake torque) and saw that the wind up would create a stress riser where the spoke exits the hub. Each cyclic torque load to the hub would flex the spoke at its exit point from the hub, incurring fatigue.

A spoke fixed with its head axially (perpendicular to the spoke pull) would allow a slight rotation which does not incur stress to the spoke.

Technical information:

Paired Spoke Technology allows a higher spoke tension because the rim does not see the unbalanced lateral forces found with alternating spoking patterns. With Rolf Vector Pro wheels with a 14/16 spoke design, this tension is greater than most tensiometers can accurately measure. However, the Rolf tensionometer is calibrated to work with these higher tensions. The next best way to determine correct tension is to listen to the tone of the spoke when you pluck it, and compare it to that of a factory tensioned wheel.

Rolf spokes in Vector Pros are bladed 13 gauge so are much stronger than conventional spokes. Vector Pro wheels also use special self-locking alloy nipples for low weight and resistance to unthreading. Rolf nipples require a 3/16" nut driver or socket-type spoke wrench (stocked by Wrench Force tools) which will fit through the access holes in the rim.

Truing Rolf wheels

In many respects, truing Rolf wheels 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 Rolf, 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 is like trying to bend the rim between the two partners. A wave of distortion is passed by each partner, and affects the third spokes out on the rim as well. This is why over tightening a conventionally spoked wheel will eventually lead to rim failure, commonly known as the potato chip.

When truing Rolf wheels, the Paired Spoke Technology 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. With a conventionally spoked wheel with a lateral deviation and no hop, you tighten one spoke, loosen two, and tighten both of the third spokes slightly to balance the tensions. 5 spokes are needed for the control of one spoke in a Rolf wheel.

When a spoke breaks in a conventional wheel, its two opposing spokes pull the rim in their direction. The third spokes from the broken one are now under greater tension, resisting the second pair. If nothing else was done to the rim, and the remaining spokes were carefully detensioned and removed, you'd likely find that the rim was actually bent in a gentle (or not so gentle) sine curve. Usually this can be trued out once the broken spoke is replaced, but you'll have to work on hop, and the tensions will be difficult to balance.

When a spoke breaks in a Rolf wheel, only half of the vertical force is found at the rim because the partner is still working to control vertical deviation. The rim will come very out of true due to the distance between pairs. But the next spokes adjacent to the missing spoke are still laterally balanced, so the rim is not bent. To repair the Rolf wheel with a broken spoke, simply replace the spoke and bring it back to tension. Normally you will not need to retension any other spokes to have a true wheel.

There is an unusual side effect of Paired Spoke Technology that occurs when a spoke breaks. If a spoke is missing, the lateral deviation may barely pass through the brakes with the quick release open because the unopposed remainder of the pair is a long way from the next spokes. When the section of rim where the spoke is broken reaches the ground, its unopposed partner loses tension. Without a tensioned spoke pulling the rim sideways, there is no lateral deviation, and the rim runs true on the ground.

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 Rolf wheels, 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.

Technical Specifications

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

2001 Rolf Models

Vector Pro

Full bladed 13 gauge spokes and hidden nipples mean only 132 grams total aerodynamic drag at 30MPH. PST means a strong, efficient, durable wheel

750 g front, 930 g rear   14° front/16° rear

Carbon Vector Pro (tubular tires only)

In incredible 397 grams lighter!

That's almost a pound!

Sestriere

For climbing mountain passes or accelerating quickly to win field sprints, weight can be the most important factor in wheel selection. However, most ultra-light wheels are flexy, wasting power. Rolf Sestriere wheels solve the flex problem with Paired Spoke Technology. And they're up to 100 grams lighter than the competition.

DT Revolution 14/17 spokes coupled to alloy nipples are built into a special Rolf rim extrusion. Rather than beef up the rim weight to support spokes which are tightly paired, the spokes are spread out just a bit. This lets Rolf decrease the rim weight, and therefore the inertial mass of the wheel is decreased. This also allows the use of a normal, external spoke wrench should the wheels need maintenance.

650 g front, 840 g rear   20° front/24° rear

Vector Comp

The same rim as the Vector Pro, but with standard aero spokes and external nipples. A worthwhile tradeoff for easy maintenance, since the Comps allow the use of a conventional spoke wrench.

18° front/20° rear   820 g front, 1083 g rear

Vector

Paired Spoke Technology at an affordable price. These wheels still offer increased durability, lower maintenance, and reduced drag compared to the 'standard' wheels used on most bikes costing hundreds of dollars more.

20° front/24° rear   825 g front, 1097 g rear

Gary Fisher: A History

A brief history of riding off road (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

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 (15) and Nick (13). When he's not on his bike or traveling the world to promote the sport, he's into collecting art; paintings, sculpture, modern and folk art.

Sugar

For 2001

The Sugar frame remains unchanged from its successful 2000 introduction. For a detailed explanation of the Sugar's B*Link design, see pages 15-16

Geometry

The regular Sugar uses Fisher's race-proven Genesis Geometry, explained on pages 9-10. 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. This combination makes the Sugar ideal for racing in technical terrain, or 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 aluminum frame technology (see page 7). 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.

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 ....

		S	M	L	XL
	Frame sizes	S	M	L	XL
	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

Sugar 1

Sweetness. Nickname for an especially dear friend.

OUR PRICE:
$ ________

FRAMESET

MAIN TUBES ....Platinum series 6061 T6 butted aluminum
STAYS ....B*Link swingarm, carbon fiber stays
Frame weight — *4.1 lb (1.86 gm)*
FORK ....RockShox SID SL w/Climb-It control
Travel, mm — *80*
Axle-crown length, mm — *450.5*
REAR SHOCK ....RockShox SID Race
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 HAS, direct connect
Steerer clamp height, mm — *39.5*
SHIFT LEVERS ......Shimano Deore XT RapidFire SL
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....WTB Dual Compound Trail Grips

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 Lite 44/32/22
Bolt hole circle, mm — *64/104*
BB ....Shimano BB-UN72
Shell x axle, mm — *73 x 113, Square*
CHAIN ....Shimano HG-72
Chain type — *9 speed*
Chain length (links) — *108*
CASSETTE ....Shimano Deore XT 11-34, 9spd

WHEELSET

FRONT WHEEL ......Bontrager Race Lite, tubeless compatible, 24°
E.R.D., mm — *539*
Rim strip — *Tubeless*
FRONT TIRE ....Michelin Comp S, tubeless
Tire size — *26 x 1.95*
REAR WHEEL ....Bontrager Race Lite, tubeless compatible, 28°
E.R.D., mm — *542*
Rim strip — *Tubeless*
REAR TIRE ....Michelin Comp S, tubeless
Tire size — *26 x 1.95*
SPOKES ....DT Revolution 14/17G, alloy nipples
Front, mm — *250, Radial*
Rear, mm — *267/263, 3x / radial*
INNER TUBES ....Presta valve (for display)

OTHER

SEATPOST ....Bontrager Race
Outer diameter, mm — *31.6*
SADDLE ....WTB TriLite, Ti/leather
BRAKES ....Avid Single Digit Mag, linear pull
PEDALS ....Bontrager RE-1, clipless
Axle diameter — *9/16"*
SEAT BINDER ....Alloy w/integral bolt
Inner diameter, mm — *36.4*
ADDITIONALS ....2 water bottle mount (one on seatpost)

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	69	73	75
	Cm	168	176	184	189
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	172.6	187.6	207.6	227.6

The reasons this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

B*Link suspension- hardtail feel, 2.5" travel

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Race Lite wheels -super light for acceleration

Tubeless compatible- fits both tubeless and regular tires

Ceramic sidewalls- durable, all weather stopping

Components

Race level- XTR, XT

RockShox SID fork and shock- totally tunable

Bontrager bar/stem, post- super strong

COLORS

Blue/Yellow Pearl • Yellow/Red decal • Red fork

BIKE WEIGHT

23.8 lb.
10.81 kg.

GEARING

	22	32	44
11	52	76	105
13	44	65	89
15	38	56	77
17	34	49	68
20	29	42	58
23	25	36	50
26	22	32	44
30	19	28	38
34	17	25	34

Sugar 2

Sweetness. Nickname for an especially dear friend.

OUR PRICE: $ ______

FRAMESET

MAIN TUBES	Platinum series 6061 T6 butted aluminum	
STAYS	B*Link swingarm, carbon fiber stays	
	Frame weight	*4.1 lb (1.86 gm)*
FORK	Manitou Mars w/Anti-Bob	
	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 Race Modified	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race Lite HAS, direct connect	
	Steerer clamp height, mm	*39.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

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	Shimano BB-UN52	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Race, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	WTB NanoRaptor, folding	
	Tire size	*47/47*
REAR WHEEL	Bontrager Race, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB NanoRaptor, folding	
	Tire size	*47/47*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*255, Radial*
	Rear, mm	*267/251, 3x / radial*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Speed V Comp, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Bontrager RE-1, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	2 water bottle mount (one on seatpost)	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

B*Link suspension- hardtail feel, 2.5" travel

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Race wheels- light and strong

WTB NanoRaptor tires- fast, yet grippy

Components

Race level- XTR, XT

Manitou fork- excellent steering control

Cane Creek AD-10 shock- air/air system is light, easily tunable

Bontrager bar/stem, post- super strong

COLORS

Pitch Black/Red • Blue/Red decal • Speed Blue fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	69	73	75
	Cm	168	176	184	189
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	172.5	187.5	207.5	227.5

BIKE WEIGHT

25.8 lb.
11.71 kg.

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

Sugar 3

Sweetness. Nickname for an especially dear friend.

OUR PRICE: $ ______

FRAMESET

MAIN TUBES	Platinum series 6061 T6 butted aluminum	
STAYS	B*Link swingarm	
	Frame weight	*4.8 lb (2.18 gm)*
FORK	Marzocchi Z.3 Air	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
REAR SHOCK	Cane Creek AD-5	
	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 Comp HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

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	SRAM PC-59 Power	
	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	WTB NanoRaptor, folding	
	Tire size	*47/47*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB NanoRaptor, folding	
	Tire size	*47/47*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/251, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB Speed V Comp, 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)	

Why this Fisher rocks:

Rider: Adventure rider or Racer

Frameset

B*Link suspension- hardtail feel, 2.5" travel

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Superstock wheels- super strong

WTB NanoRaptor tires- fast, yet grippy

Components

Expert level- XT, LX

Marzocchi fork- super plush

Cane Creek AD-5 shock- air/air system is light, negative spring is plush

Bontrager Crowbar- riser for comfort, wide for control

Sugar 3 Disc

BIKE WEIGHT

28.4 lb.
12.89 kg.

OUR PRICE: $ ______

BRAKE LEVERS	Hydraulic, attached to brake	
BRAKES	Hayes Disc, full hydraulic	
	Rotor diameter	*6.3 in.*
	Bolt circle diameter	*44mm*
FRONT WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*266/264, 2x*
	Rear, mm	*264/265, 2x*

Frame	Size	S	M	L	XL
Front brake hose		690	690	690	750
Rear brake hose		1220	1220	1280	1350

COLORS

Chad Silver/Metalflake Blue • Blue/Red decal • Speed Blue fork
(both Sugar 3 and Sugar 3 Disc)

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	71	74	76
	Cm	171	180	189	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	174.0	189.0	209.0	229.0

BIKE WEIGHT

27.5 lb.
12.49 kg.

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

Sugar 4

Sweetness. Nickname for an especially dear friend.

OUR PRICE:
$

FRAMESET

MAIN TUBES	Platinum series 6061 T6 butted aluminum	
STAYS	B*Link swingarm	
	Frame weight	*4.8 lb (2.18 gm)*
FORK	Marzocchi Z.5 Air	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
REAR SHOCK	Cane Creek AD-5	
	Stroke	*1.5*
	Length	*6.5*
	Width	*1/2 and 7/8"*
	Eyes	*6 and 15.08mm*
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 HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Alivio RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	WTB Dual Compound Trail Grips	

DRIVETRAIN

FT DERAILLEUR	SRAM 5.0	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8", high clamp only*
RR DERAILLEUR	Shimano Deore SGS	
CRANKSET	Shimano Alivio 42/32/22	
	Bolt hole circle, mm	*64/104*
BB	Shimano BB-LP27	
	Shell x axle, mm	*73 x 113, 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	WTB VelociRaptor	
	Tire size	*26 x 2.1*
REAR WHEEL	Shimano Alivio hub, 32°, Btrgr Corvair ASYM	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.9*
SPOKES	14G stainless	
	Front, mm	*265, 3x*
	Rear, mm	*262/263, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Alloy direct pull	
PEDALS	Alloy cage, clipless adaptable	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*36.4*
ADDITIONALS	1 water bottle mount	

Why this Fisher rocks:

Rider: Adventure rider or Athletic newbie

Frameset

B*Link suspension- hardtail feel, 2.5" travel

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Bontrager rims- light and strong

WTB VelociRaptor tires- super traction

Components

Sport level- Alivio, Deore

Marzocchi fork- super plush

Cane Creek AD-5 shock- air/air system is light, negative spring is plush

Bontrager Crowbar- riser for comfort, wide for control

Clipless adaptable pedals- easy to use, and can be upgraded

COLORS

Metalflake Red/ Chad Silver • Silver/Black decal • Gloss Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	71	74	76
	Cm	171	181	189	194
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	170.2	185.2	205.2	225.2

BIKE WEIGHT

29.4 lb.
13.35 kg.

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
26	22	32	44
32	18	26	36

Joshua

For 2001

The Joshua design was first introduced by for the 1996 model year. Since then, it has become what is likely the most popular full suspension design of all time.

Geometry

The Joshua uses Genesis geometry (see pages 9-10), adapted for suspension through a slightly higher bottom bracket. The extra bottom bracket height helps avoid pedal to ground contact under compression of the rear suspension.

Ride

This design is a great all-round suspension. The Joshua features makes the Joshua bike a great mountain bike for the newbie, who will learn faster and have more fun with suspension. It also is a great bike for every-day, casual riders who will benefit from the comfort and added traction provided by the suspension. With more travel than many popular designs, the Joshua is an all-mountain design that's sure to make many a rider smile (it's already done that for thousands!).

While not outstanding in every category, the Joshua manages to offer a good compromise of frame rigidity, pedaling efficiency, longer travel, lower weight, low maintenance, and good suspension feel. The Joshua bike uses a URT, or Unified Rear Triangle. In this design, there is no motion between the bottom bracket and rear wheel, so chain tension cannot effect the suspension action. This provides efficient pedaling, with zero 'inch-worming'.

Frame details

The Joshua uses Silver series frame technology (see page 7).

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

Shock mount . . . .
Pivot hardware . . . . . .
Seatpost bottle mount
Derailleur hanger . . . .

	Frame sizes	S	M	L
	Head angle	70.5	71.0	71.0
	Seat angle	74.0	73.5	73.0
MILLIMETERS	Standover	692	679	672
	Seat tube	406	470	533
	Head tube	115	125	145
	Eff top tube	575	606	647
	Chainstays	413	413	413
	BB height	301	303	306
	Offset	42.0	42.0	42.0
	Trail	74	71	71
	Wheelbase	1057	1079	1117
INCHES	Standover	27.2	26.7	26.5
	Seat tube	16.0	18.5	21.0
	Head tube	4.5	4.9	5.7
	Eff top tube	22.6	23.9	25.5
	Chainstays	16.3	16.3	16.3
	BB height	11.9	11.9	12.0
	Offset	1.7	1.7	1.7
	Trail	2.9	2.8	2.8
	Wheelbase	41.6	42.5	44.0

Joshua

A name that goes well with Judy, but hinting a religious experience.

FRAMESET

FRAME ....Silver series 7005 aluminum
- *Frame weight* — *6.1 lb (2.76 gm)*

FORK ....RockShox Jett
- *Travel, mm* — *65*
- *Axle-crown length, mm* — *424*

REAR SHOCK ....RST 21
- *Stroke* — *1*
- *Length* — *165mm*
- *Width* — *7/8"*
- *Eyes* — *6mm*

HEADSET ....STR Aheadset
- *Size* — *25.4/34.0/30.0*
- *Stack height, mm* — *23.4*

CONTROLS

HANDLEBAR ....Bontrager Crowbar Sport, 25mm rise
- *Clamp diameter, mm* — *25.4*

STEM ....Bontrager Sport HAS, direct connect
- *Steerer clamp height, mm* — *41.0*

SHIFT LEVERS ......Shimano EZ Fire+ EF33

BRAKE LEVERS .....Integrated brake/shift

GRIPS ....WTB Dual Compound Trail

DRIVETRAIN

FT DERAILLEUR .....Shimano Altus
- *Cable routing* — *Top pull (low band clamp only)*
- *Attachment* — *34.9 mm/ 1 3/8", bracket type*

RR DERAILLEUR .....Shimano Alivio SGS

CRANKSET ....Shimano Altus 42/34/24
- *Bolt hole circle, mm* — *Riveted*

BB ....Shimano BB-CT92E
- *Shell x axle, mm* — *73 x 121, Square*

CHAIN IG31
- *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* — *PVC*

FRONT TIRE ....WTB Velociraptor
- *Tire size* — *47/52*

REAR WHEEL ....Shimano RM40 hub, 32°, Bontrager Corvair
- *E.R.D., mm* — *542*
- *Rim strip* — *PVC*

REAR TIRE ....WTB Velociraptor
- *Tire size* — *47/52*

SPOKES ....DT 14G stainless
- *Front, mm* — *264, 3x*
- *Rear, mm* — *262/263, 3x*

INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Bontrager Sport
- *Outer diameter, mm* — *31.6*

SADDLE ....SSM Linea

BRAKES ....Alloy direct pull

PEDALS ....Alloy ATB
- *Axle diameter* — *9/16"*

SEAT BINDER ....Alloy w/integral QR
- *Inner diameter, mm* — *36.4*

ADDITIONALS ....2 water bottle mounts, replaceable derailleur hanger, handlebar damping adjuster

FIT

Frame	Size	S	M	L
Rider height	Inches	75	79	84
	Cm	191	200	212
Handlebar	Width, mm	580	600	600
Stem	Length, mm	90	110	130
	Angle	25	25	25
Crank	Length, mm	175	175	175
Seatpost	Length, mm	300	350	350
Steerer	Length, mm	206	216	236

OUR PRICE:

$ ________

Why this Fisher rocks:

Rider: Aggressive newbie or comfort rider

Frameset

Joshua suspension- all-round performance

Genesis geometry- stable, fast

URT design- no suspension activation through chain tension

Wheelset

Bontrager rims- light and strong

WTB VelociRaptor tires- super traction

Components

Enthusiast level- Alivio

Bontrager Crowbar- riser for comfort, wide for control

Saddle, bars, and pedals- Comfortable and user friendly

COLORS

Yellow/Black • Black/Red decal • Black fork

BIKE WEIGHT

30.8 lb.
13.98 kg.

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

Genesis Hardtails

For 2001

The Genesis hardtails were introduced in the 1998 model year. The frame is unchanged.

Geometry

The regular Genesis hardtails hardtail uses Gary Fisher's race-proven Genesis Geometry, explained on page ??.

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 (see pages ??). 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 ...

	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

Supercaliber

Above any ranking. Beyond the professional level

OUR PRICE:
$ ________

FRAMESET		
FRAME	Platinum series 6061 T6 butted aluminum	
	Frame weight	*3.1 lb (1.41 gm)*
FORK	RockShox SID SL w/Climb-It control	
	Travel, mm	*80*
	Axle-crown length, mm	*442.0*
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 HAS	
	Steerer clamp height, mm	*39.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	
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	Shimano BB-UN72	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano Deore XT 11-34, 9spd	
WHEELSET		
FRONT WHEEL	Bontrager Race Lite, tubeless compatible, 24°	
	E.R.D., mm	*542*
	Rim strip	*Tubeless*
FRONT TIRE	Michelin Comp S, tubeless	
	Tire size	*26 x 1.95*
REAR WHEEL	Bontrager Race Lite, tubeless compatible, 28°	
	E.R.D., mm	*541*
	Rim strip	*Tubeless*
REAR TIRE	Michelin Comp S, tubeless	
	Tire size	*26 x 1.95*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*255, Radial*
	Rear, mm	*267/251, 3x / radial*
INNER TUBES	Presta valve, ultra light (for display)	
OTHER		
SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB TriLite, Ti/leather	
BRAKES	Avid Single Digit Mag, linear pull	
PEDALS	Bontrager RE-1, 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: Racer

Frameset

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Bontrager Race Lite-super light wheels for acceleration

Tubeless compatible- fits both tubeless and regular tires

Ceramic sidewalls- durable, all weather stopping

Components

Race level- XTR, XT

RockShox SID fork- totally tunable

Bontrager bar/stem, post- super strong

COLORS

Blue/ Yellow Pearl • Yellow/Red decal • Red fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	66	70	73	74
	Cm	169	177	185	188
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	172.6	187.6	207.6	227.6

BIKE WEIGHT
22.2 lb.
10.08 kg.

GEARING

	22	32	44
11	52	76	105
13	44	65	89
15	38	56	77
17	34	49	68
20	29	42	58
23	25	36	50
26	22	32	44
30	19	28	38
34	17	25	34

Mt. Tam

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

OUR PRICE:
$ ________

FRAMESET		
FRAME	Platinum series 6061 T6 butted aluminum	
	Frame weight	*3.1 lb (1.41 gm)*
FORK	Marzocchi Z.2 Atom Sport	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
HEADSET	SAS Aheadset, alloy	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*27.0*
CONTROLS		
HANDLEBAR	Bontrager Race Modified	
	Clamp diameter, mm	*25.4*
STEM	Bontrager Race Lite HAS	
	Steerer clamp height, mm	*39.5*
SHIFT LEVERS	Shimano Deore XT RapidFire SL	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	
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	Shimano BB-UN52	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano HG70 11-32, 9spd	
WHEELSET		
FRONT WHEEL	Bontrager Race, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	WTB NanoRaptor, folding	
	Tire size	*47/52*
REAR WHEEL	Bontrager Race, 28°	
	E.R.D., mm	*541*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB NanoRaptor, folding	
	Tire size	*47/52*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*255, Radial*
	Rear, mm	*267/251, 3x / radial*
INNER TUBES	Presta valve	
OTHER		
SEATPOST	Bontrager Race	
	Outer diameter, mm	*31.6*
SADDLE	WTB Speed V Comp, CrMo rails	
BRAKES	Avid Single Digit 5, linear pull	
PEDALS	Bontrager RE-1, 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: Racer

Frameset

Genesis geometry- stable, fast

Platinum series aluminum- light, super strong

Wheelset

Bontrager Race- light wheels for acceleration

WTB NanoRaptor tires- fast, yet grippy

Components

Race level- XTR, XT

Marzocchi fork- super plush

Bontrager bar/stem, post- super strong

Mt. Tam Disc- superior stopping in all conditions, no rim wear

Mt. Tam Disc

BIKE WEIGHT
25.7 lb.
11.67 kg.

OUR PRICE:
$ ________

BRAKE LEVERS	Hydraulic, attached to brake	
BRAKES	Shimano deore XT disc, full hydraulic	
	Rotor diameter	*6.3 in.*
	Bolt circle diameter	*44mm*
FRONT WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*266/264, 2x*
	Rear, mm	*264/265, 2x*

Frame	Size	S	M	L	XL
Front brake hose		600	600	600	600
Rear brake hose		1250	1300	1300	1300

COLORS

Chad Silver /Metalflake Blue • Blue/White decal • Speed Blue fork
(both Mt. Tam and Mt. Tam Disc)

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	67	70	73	75
	Cm	170	179	186	190
Handlebar	Width, mm	620	620	620	620
Stem	Length, mm	75	90	105	105
	Angle	7	7	7	7
Crank	Length, mm	170	175	175	175
Seatpost	Length, mm	300	350	350	350
Steerer	Length, mm	177.5	192.5	212.5	232.5

BIKE WEIGHT
24.2 lb.
10.99 kg.

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

Paragon

The lofty ideal. Perfection.

FRAMESET

FRAME	Platinum series 6061 T6 butted aluminum	
	Frame weight	*3.1 lb (1.41 gm)*
FORK	Manitou SX-R	
	Travel, mm	*80*
	Axle-crown length, mm	*442*
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 HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

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-UN52	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano HG50 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	WTB VelociRaptor	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/251, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB Speed V Comp, CrMo rails	
BRAKES	Avid Single Digit 3, linear 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	

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	71	75	76
	Cm	173	181	189	193
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	350	350	350	350
Steerer	Length, mm	174.0	189.0	209.0	229.0

OUR PRICE:
$ ________

Why this Fisher rocks:

Rider: Adventure rider or Racer

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

Wheelset
- Bontrager Superstock wheels- light, strong
- WTB NanoRaptor tires- fast, yet grippy

Components
- Expert level- XT, Comp
- Manitou fork- steering control
- Bontrager Crowbar- riser for comfort, wide for control
- Paragon Disc- superior stopping in all conditions, no rim wear

Paragon Disc

BIKE WEIGHT
26.5 lb.
12.03 kg.

OUR PRICE:
$ ________

BRAKE LEVERS	Hydraulic, attached to brake	
BRAKES	Hayes Disc, full hydraulic	
	Rotor diameter	*6.3 in.*
	Bolt circle diameter	*44mm*
FRONT WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR WHEEL	Bontrager Race Disc, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*266/264, 2x*
	Rear, mm	*264/265, 2x*

Frame	Size	S	M	L	XL
Front brake hose		690	690	690	750
Rear brake hose		1220	1220	1280	1350

COLORS
Metalflake Red/Pitch Black • White/Black decal • Black fork
(both Paragon and Paragon Disc)

BIKE WEIGHT
25.9 lb.
11.76 kg.

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

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.

Some issues with Marzocchi fork + axle interface
corrective endcap/axle lock nut
22 mm – 68258

OUR PRICE:
$ ________

FRAMESET

FRAME	Gold series 6061 T6 aluminum	
	Frame weight	*3.5 lb (1.59 gm)*
FORK	Marzocchi Z.5 Air	
	Travel, mm	*80*
	Axle-crown length, mm	*450.5*
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 HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	WTB Dual Compound Trail Grips	

DRIVETRAIN

FT DERAILLEUR	Shimano Deore	
	Cable routing	*Top pull*
	Attachment	*34.9 mm/ 1 3/8"*
RR DERAILLEUR	Shimano Deore LX 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	SRAM PC-59 Power	
	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	WTB VelociRaptor	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/251, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X	
BRAKES	Shimano M420, V type	
PEDALS	Alloy ATB, clipless adaptable	
	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: Athletic every-day or Adventure rider

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

Wheelset
- Bontrager Superstock wheels- light, strong
- WTB VelociRaptor tires- super grippy

Components
- Expert level- LX, Comp
- Marzocchi fork- super plush
- Bontrager Crowbar- riser for comfort, wide for control
- Shimano clipless pedals- better power transfer, bike control

COLORS
Metalflake Blue/Chad Silver • Silver/Black decal • Silver fork

FIT

Frame	Size	S	M	L	XL
Rider height	Inches	68	72	75	76
	Cm	173	182	190	194
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	170.2	185.2	205.2	225.2

BIKE WEIGHT
26.7 lb.
12.12 kg.

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

Hoo Koo E Koo

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

OUR PRICE:
$ ______

FRAMESET
FRAME ....Gold series 6061 T6 aluminum
Frame weight 3.5 lb (1.59 gm)
FORK ....Manitou Magnum R
Travel, mm 76
Axle-crown length, mm 438
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 HAS
Steerer clamp height, mm 41.0
SHIFT LEVERS ......Shimano Deore RapidFire+
BRAKE LEVERS .....Alloy, direct pull
GRIPS ....WTB Dual Compound Trail Grips

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-LP27
Shell x axle, mm 73 x 113, Square
CHAIN ....SRAM PC-59 Power
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 ....WTB VelociRaptor
Tire size 26 x 2.1
REAR WHEEL ....Shimano C201 hub, 32°, Bontrager Corvair ASYM rim
E.R.D., mm 542
Rim strip Velox 22mm
REAR TIRE ....WTB VelociRaptor
Tire size 26 x 1.9
SPOKES ....14G stainless
Front, mm 265, 3x
Rear, mm 262/263, 3x
INNER TUBES ....Presta valve

OTHER
SEATPOST ....Bontrager Sport
Outer diameter, mm 31.6
SADDLE ....WTB SST.X
BRAKES ....Alloy direct pull
PEDALS ....Alloy ATB, clipless adaptable
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
WTB VelociRaptor tires- super grippy

Components
Enthusiast level- LX, Deore
Manitou fork- steering control
Bontrager Crowbar- riser for comfort, wide for control
Clipless adaptable pedals- user friendly, can be upgraded
Hoo Koo Disc- superior all-conditions braking

Hoo Koo E Koo Disc

BIKE WEIGHT
28.2 lb.
12.80 kg.

OUR PRICE:
$ ______

BRAKES ....Avid Disc, mechanical
Rotor diameter 165mm
Bolt circle diameter 44mm
FRONT WHEEL ......Alloy, QR hub, 32°, Bontrager Corvair ASYM rim
E.R.D., mm 542
Rim strip Velox 22mm
REAR WHEEL ....Alloy, QR hub, 32°, Bontrager Corvair ASYM rim
E.R.D., mm 542
Rim strip Velox 22mm
SPOKES ....DT 14G stainless
Front, mm 262, 3x
Rear, mm 262, 3x

COLORS
Blue/Yellow • White/Red decal • Red fork

COLORS
Black/Red • Yellow/Red decal • Red fork
Blue/Yellow • White/Red decal • Red fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	65	68	71	74	76
	Cm	165	173	181	189	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	175	175	175
Seatpost	Length, mm	300	350	350	350	350
Steerer	Length, mm	170.2	170.2	185.2	205.2	225.5

BIKE WEIGHT
27.3 lb.
12.39 kg.

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

Tassajara

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

OUR PRICE:
$ ______

FRAMESET
FRAME ....Silver series 7005 aluminum
Frame weight 3.9 lb (1.77 gm)
FORK ....Manitou Magnum
Travel, mm 76
Axle-crown length, mm 438
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 HAS
Steerer clamp height, mm 41.0
SHIFT LEVERS ......Shimano Alivio RapidFire+
BRAKE LEVERS .....Alloy, direct pull
GRIPS ....WTB Dual Compound Trail Grips

DRIVETRAIN
FT DERAILLEUR .....Shimano Acera-X
Cable routing Top pull
Attachment Plate style w/34.9mm clamp
RR DERAILLEUR .....Shimano Deore SGS
CRANKSET ....Shimano Acera-X 42/32/22
Bolt hole circle, mm 61
BB ....Shimano BB-LP27E
Shell x axle, mm 73 x 113, 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 ....WTB VelociRaptor
Tire size 26 x 2.1
REAR WHEEL ....Shimano C201 hub, 32°, Bontrager Corvair ASYM rim
E.R.D., mm 542
Rim strip Velox 19mm
REAR TIRE ....WTB VelociRaptor
Tire size 26 x 1.9
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 ....SSM Linea
BRAKES ....Alloy direct pull
PEDALS ....Alloy
Axle diameter 9/16"
SEAT BINDER ....Alloy w/integral QR
Inner diameter, mm 35.0
ADDITIONALS ....2 water bottle mounts (1 on XS, S), rack mounts
Early production: seatpost will be 27.2, binder 31.9

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
WTB VelociRaptor tires- super grippy

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

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

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	65	68	71	74	76
	Cm	165	173	181	189	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	175	175	175
Seatpost	Length, mm	300	300	350	350	350
Steerer	Length, mm	170.2	170.2	185.2	205.2	225.2

BIKE WEIGHT
27.9 lb.
12.67 kg.

GEARING

	22	32	42
11	52	76	100
12	48	70	92
14	41	60	79
16	36	52	69
18	32	47	61
21	27	40	52
26	22	32	42
32	18	26	34

Marlin

Big game fish known for its strength and beauty.

FRAMESET

FRAME ....Silver series 7005 aluminum
Frame weight — *3.9 lb (1.77 gm)*
FORK ....RockShox Jett
Travel, mm — *65*
Axle-crown length, mm — *424*
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 HAS
Steerer clamp height, mm — *41.0*
SHIFT LEVERS ......Shimano EZ Fire+ EF33
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....WTB Dual Compound Trail Grips

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 ....WTB VelociRaptor
Tire size — *26 x 2.1*
REAR WHEEL ....Shimano RM40 hub, 32°, Bontrager Corvair rim
E.R.D., mm — *542*
Rim strip — *Velox 19mm*
REAR TIRE ....WTB VelociRaptor
Tire size — *26 x 1.9*
SPOKES ....DT 14G stainless
Front, mm — *265, 3x*
Rear, mm — *263/265, 3x*
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Alloy micro-adjust
Outer diameter, mm — *27.2*
SADDLE ....SSM Linea
BRAKES ....Alloy direct pull
PEDALS ....Alloy
Axle diameter — *9/16"*
SEAT BINDER ....Alloy w/integral QR
Inner diameter, mm — *31.9*
ADDITIONALS ....2 water bottle mounts (1 on XS, S), rack mounts

OUR PRICE:
$ ________

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

WTB VelociRaptor tires- super grippy

Components

Enthusiast level- Deore, Acera

Manitou fork- steering control

Bontrager Crowbar- riser for comfort, wide for control

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

COLOR

Blue/White • White/Silver decal • Black fork
Black/Red • Red/White decal • Black fork

FIT

Frame	Size	XS	S	M	L	XL
Rider height	Inches	64	67	71	74	76
	Cm	164	171	181	188	192
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	350	350	350	350
Steerer	Length, mm	180.2	180.2	195.2	215.2	235.2

BIKE WEIGHT

28.2 lb.
12.80 kg.

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

Genesisters

New for 2001

The Genesisters is a brand new frame and bike design for Gary Fisher this year. These bikes are designed to fit and perform for a woman (see "Women on Bikes" on pages 12-13).

Geometry

The regular Genesis hardtails use Gary's race-proven Genesis Geometry, explained on pages 9-10. 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 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 Genesisters 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 Genesisters 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 Genesisters hardtails use our Platinum and Gold series frame technology (see page 7).

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 2 water bottle mounts.

Special Parts

Derailleur hanger ....
Disc brake adapter ...

	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 GS

The lofty ideal. Perfection.

OUR PRICE: $ ______

FRAMESET

FRAME	Platinum series 6061 T6 butted aluminum	
	Frame weight	*3.1 lb (1.41 gm)*
FORK	Manitou SX-R, light springs	
	Travel, mm	*80*
	Axle-crown length, mm	*442*
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 HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore LX RapidFire+	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

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-UN52	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	Shimano HG50 11-32, 9spd	

WHEELSET

FRONT WHEEL	Bontrager Superstock, 24°	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	WTB VelociRaptor	
	Tire size	*26 x 2.1*
REAR WHEEL	Bontrager Superstock, 28°	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
SPOKES	DT 14G stainless	
	Front, mm	*254, Radial*
	Rear, mm	*267/251, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB Speed V Comp, 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 QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts (2 on XS), replaceable derailleur hanger	

FIT

		XS	S	M
Frame	Size	XS	S	M
Rider height	Inches	64	66	68
	Cm	163	167	174
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	350	350	350
Steerer	Length, mm	174.0	174.0	189.0

Why this Fisher rocks:

Rider: Woman adventure rider or Racer

Frameset

Genesisters geometry- stable, fast for a woman

Platinum series aluminum- light, super strong

Wheelset

Bontrager Superstock wheels- light, strong

WTB NanoRaptor tires- fast, yet grippy

Components

Expert level- XT, Comp

Manitou fork- steering control

Bontrager Crowbar- riser for comfort, wide for control

Genesisters parts (fork, bars, cranks, saddle)- performance and fit for a woman

COLORS

White/Metalflake Red • Red/Black decal • Red fork

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

25.7 lb.
11.67 kg.

Hoo Koo E Koo GS

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

OUR PRICE: $ ______

FRAMESET

FRAME	Gold series 6061 T6 aluminum	
	Frame weight	*3.5 lb (1.59 gm)*
FORK	Manitou Magnum R, light springs	
	Travel, mm	*76*
	Axle-crown length, mm	*438*
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 HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Deore RapidFire+	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	WTB Dual Compound Trail Grips	

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-LP27	
	Shell x axle, mm	*73 x 113, Square*
CHAIN	SRAM PC-59 Power	
	Chain type	*9 speed*
	Chain length (links)	*106*
CASSETTE	SRAM 7.0 11-32, 9spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, rim	
	E.R.D., mm	*542*
	Rim strip	*Velox 19mm*
FRONT TIRE	WTB VelociRaptor	
	Tire size	*26 x 2.1*
REAR WHEEL	Shimano C201 hub, 32°, Btrgr Corvair ASYM	
	E.R.D., mm	*542*
	Rim strip	*Velox 22mm*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.9*
SPOKES	DT 14/15G butted stainless, alloy nipples	
	Front, mm	*265, 3x*
	Rear, mm	*262/263, 3x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	Bontrager Sport	
	Outer diameter, mm	*31.6*
SADDLE	WTB SST.X, Women's	
BRAKES	Alloy direct pull	
PEDALS	Alloy ATB, clipless adaptable	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral QR	
	Inner diameter, mm	*36.4*
ADDITIONALS	3 water bottle mounts, replaceable derailleur hanger	

FIT

		XS	S	M
Frame	Size	XS	S	M
Rider height	Inches	64	66	68
	Cm	162	167	173
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	350	350
Steerer	Length, mm	170.0	170.2	185.2

Why this Fisher rocks:

Rider: Athletic every-day or Adventure riding woman

Frameset

Genesisters geometry- stable, fast for a woman

Gold series aluminum- super strong

Wheelset

Bontrager rims- light, strong, smooth braking

WTB VelociRaptor tires- super grippy

Components

Enthusiast level- LX, Deore

Manitou fork- steering control

Bontrager Crowbar- riser for comfort, wide for control

Clipless adaptable pedals- user friendly, can be upgraded

Genesisters parts (fork, bars, cranks, saddle)- performance and fit for a woman

COLORS

Blue/Yellow • Yellow/Red decal • Yellow fork

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

27.3 lb.
12.39 kg.

Genesis Unplugged

New for 2001

These hardtails were introduced in the 1999 model year. The frame centerline is unchanged, but we have updated the tubing specs to create a new, robust design.

Geometry

The regular Genesis hardtails uses Gary Fisher's race-proven Genesis Geometry, explained on pages 9-10. 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

Wahoo

Thin, silvery fish. Exclamation of excited fun.

OUR PRICE:
$ ________

FRAMESET

FRAME ....Double-butted Cro-Moly steel
FORK ....RockShox Jett
Travel, mm 65
Axle-crown length, mm 434.5
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 HAS
Steerer clamp height, mm 40.0
SHIFT LEVERS ......Shimano EZ Fire+ EF33
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....WTB Dual Compound Trail Grips

DRIVETRAIN

FT DERAILLEUR .....Shimano Altus
Cable routing Top pull
Attachment 31.8 mm/ 1 1/4"
RR DERAILLEUR .....Shimano Alivio
CRANKSET ....Shimano Altus 42/34/24
Bolt hole circle, mm Riveted
BB ....Shimano BB-CT92E
Shell x axle, mm 68 x 115, 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 537
Rim strip Rubber
FRONT TIRE ....WTB VelociRaptor
Tire size 26 x 1.95
REAR WHEEL ......Shimano RM40 hub, 32°, Bontrager Corvair rim
E.R.D., mm 537
Rim strip Rubber
REAR TIRE ....WTB VelociRaptor
Tire size 26 x 1.95
SPOKES ....14G stainless
Front, mm 267, 3x
Rear, mm 265/266, 3x
INNER TUBES ......Schraeder valve

OTHER

SEATPOST ....Alloy micro-adjust
Outer diameter, mm 29.2
SADDLE ....Oasis Supersoft
BRAKES ....Alloy direct pull
PEDALS ....Alloy cage, clipless adaptable
Axle diameter 9/16"
SEAT BINDER ....Kalloy M6 x 55
Inner diameter, mm
ADDITIONALS ....2 water bottle mounts (1 on XS, S), rack mounts

FIT

Frame	Size	XS	S	M	L	XL	XXL
Rider height	Inches	68	71	74	76	79	80
	Cm	173	181	189	193	201	203
Handlebar	Width, mm	580	580	600	600	620	600
Stem	Length, mm	90	105	120	120	135	120
	Angle	25	25	25	25	25	25
Crank	Length, mm	170	170	170	170	170	170
Seatpost	Length, mm	300	300	350	350	350	300
Steerer	Length, mm	196	216	236	256	276	296

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

Bontrager rims- light, strong, smooth braking

WTB VelociRaptor tires- super grippy

Components

Enthusiast level- Alivio, Acera

RockShox fork- comfort and control over bumps

Bontrager Crowbar- riser for comfort, wide for control

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

COLORS

Red/Silver • Silver/Black decal • Silver fork
Gunmetal Blue/Black • White/Black decal • Black fork

BIKE WEIGHT

31.3 lb.
14.21 kg.

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

Mamba

A great dance you can do on your bike.

OUR PRICE: $ ______

FRAMESET

FRAME	Hi Tensile steel	
	Frame weight	*lb (gm)*
FORK	RockShox Jett	
	Travel, mm	*65*
	Axle-crown length, mm	*397*
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	Steel ATB	
SHIFT LEVERS	Shimano EZ Fire+ EF33	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

DRIVETRAIN

FT DERAILLEUR	Shimano Altus	
	Cable routing	*Top pull, (W-down)*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Alivio	
CRANKSET	Shimano C102 48/38/28, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Shimano BB-CT92E	
	Shell x axle, mm	*68 x 122.5, Square*
CHAIN	IG-31	
	Chain type	*3/32"*
	Chain length (links)	*110*
CASSETTE	SRAM 5.0 11-32, 8spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim	
	E.R.D., mm	*537*
	Rim strip	*Rubber*
FRONT TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
REAR WHEEL	Shimano RM40 hub, 32°, Bontrager Corvair rim	
	E.R.D., mm	*537*
	Rim strip	*Rubber*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*267, 3x*
	Rear, mm	*265/266, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*29.2*
SADDLE	Oasis Supersoft	
BRAKES	Alloy direct pull	
PEDALS	Alloy cage, clipless adaptable	
	Axle diameter	*9/16"*
SEAT BINDER	Bolt, M6 x 30	
	Inner diameter, mm	
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

Bontrager rims- light, strong, smooth braking

WTB VelociRaptor tires- super grippy

Components

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

RockShox fork- comfort and control over bumps

Bontrager Crowbar- riser for comfort, wide for control

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

COLORS

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

BIKE WEIGHT

34.0 lb.
15.44 kg.

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

FIT

Frame	Size	XS	S	M	L	XL	M-L
Handlebar	Width, mm	580	580	600	600	620	600
Stem	Length, mm	90	105	120	120	135	120
	Angle	25	25	25	25	25	25
Crank	Length, mm	170	170	170	175	175	170
Seatpost	Length, mm	300	300	350	350	350	300
Steerer	Length, mm	143	163	183	203	223	183

Tarpon

Big (up to 100 lbs.) game fish

OUR PRICE: $ ______

FRAMESET

FRAME	Hi Tensile steel	
FORK	RockShox Jett	
	Travel, mm	*65*
	Axle-crown length, mm	*397*
HEADSET	Sealed	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Bontrager Crowbar Sport, 25mm rise	
	Clamp diameter, mm	*25.4*
STEM	Steel ATB	
SHIFT LEVERS	Shimano EZ Fire+ EF33	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	WTB Dual Compound Trail Grips	

DRIVETRAIN

FT DERAILLEUR	Shimano Altus	
	Cable routing	*Top pull, (W-down)*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Alivio	
CRANKSET	Shimano C102 48/38/28, w/chainguard	
	Bolt hole circle, mm	*Riveted*
BB	Shimano BB-CT92E	
	Shell x axle, mm	*68 x 122.5, Square*
CHAIN	IG-31	
	Chain type	*3/32"*
	Chain length (links)	*110*
CASSETTE	HG72 13-28, 7spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 32°, Bontrager Corvair rim	
	E.R.D., mm	*537*
	Rim strip	*Rubber*
FRONT TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
REAR WHEEL	Shimano RM40 hub, 32°, Bontrager Corvair rim	
	E.R.D., mm	*537*
	Rim strip	*Rubber*
REAR TIRE	WTB VelociRaptor	
	Tire size	*26 x 1.95*
SPOKES	14G stainless	
	Front, mm	*267, 3x*
	Rear, mm	*265/266, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*29.2*
SADDLE	Oasis Supersoft	
BRAKES	Alloy direct pull	
PEDALS	Alloy cage, clipless adaptable	
	Axle diameter	*9/16"*
SEAT BINDER	Bolt, M6 x 30	
	Inner diameter, mm	
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

Bontrager rims- light, strong, smooth braking

WTB VelociRaptor tires- super grippy

Components

Recreation level- 21 speed, 'V' type brakes

RockShox fork- comfort and control over bumps

Bontrager Crowbar- riser for comfort, wide for control

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

COLORS

Red/Black • White/Black decal • Black fork
Black/Blue • White/Black decal • Blue fork

BIKE WEIGHT

31.5 lb.
14.30 kg.

GEARING

	28	38	48
13	56	77	97
14	52	71	90
15	49	66	84
18	41	55	70
21	35	47	60
24	31	42	52
28	26	36	45

FIT

Frame	Size	XS	S	M	L	XL	M-L
Handlebar	Width, mm	580	580	600	600	620	600
Stem	Length, mm	90	105	120	120	135	120
	Angle	25	25	25	25	25	25
Crank	Length, mm	170	170	170	175	175	170
Seatpost	Length, mm	300	300	350	350	350	300
Steerer	Length, mm	143	163	183	203	223	183

Comfort Series

New for 2001

Gary's Comfort series bikes address an emerging segment of the bike market. These are new bikes for 2001.

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 afficionados 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 (see page 9).

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.

	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

Solstice

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

OUR PRICE:
$ ________

FRAMESET

FRAME ....Silver series 7005 aluminum
FORK ....InSync 178
Travel, mm 45
Axle-crown length, mm 454
HEADSET ....Sealed
Size 25.4/34.0/30.0
Stack height, mm 35.9

CONTROLS

HANDLEBAR ....Alloy, 25° bend, 50mm rise
Clamp diameter, mm 25.4
STEM ....Alloy adjustable rise
SHIFT LEVERS .....Shimano Nexave 400 RapidFire+
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....Comfort

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
Cable routing Down pull
Attachment 34.9 mm/ 1 3/8"
RR DERAILLEUR .....Shimano Nexave 400
CRANKSET ....Shimano Nexave T303 48/38/28, w/chainguard
Bolt hole circle, mm Riveted
BB ....Cartridge
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 ......Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
FRONT TIRE ....City tread
Tire size 26 x 1.95
REAR WHEEL ....Shimano Alivio hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
REAR TIRE ....City tread
Tire size 26 x 1.95
SPOKES ....14G stainless
Front, mm 265, 3x
Rear, mm 263/265, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Shock absorber
Outer diameter, mm 27.2
SADDLE ....Oasis Webspring
BRAKES ....Shimano M420, V type w/Modulator
PEDALS ....Platform, dual density
Axle diameter 9/16"
SEAT BINDER ....Alloy w/quick release
Inner diameter, mm 31.9
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

Bontrager rims- light, strong, smooth braking

City Tread tires- smooth for speed, and wide for low-pressure comfort

Components

Recreation level- Nexave 400, 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

COLORS

Titanium/Silver • Silver/Dark Silver decal • Silver fork

FIT

Frame	Size	S	M	L	XL	M-L
Handlebar	Width, mm	580	580	600	600	580
Stem	Length, mm	110	110	110	110	110
	Angle	45	45	45	45	45
Crank	Length, mm	170	175	175	175	170
Seatpost	Length, mm	350	350	350	350	300
Steerer	Length, mm	163	183	223	263	183

BIKE WEIGHT

34.3 lb.
15.57 kg.

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

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.

OUR PRICE:
$ ______

FRAMESET

FRAME ....Silver series 7005 aluminum
FORK ....InSync 178
Travel, mm 45
Axle-crown length, mm 454
HEADSET ....Sealed
Size 25.4/34.0/30.0
Stack height, mm 35.9

CONTROLS

HANDLEBAR ....Alloy, 25° bend, 50mm rise
Clamp diameter, mm 25.4
STEM ....Alloy adjustable rise
SHIFT LEVERS ......Shimano Nexave 400 RapidFire+
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....Comfort

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
Cable routing Down pull
Attachment 34.9 mm/ 1 3/8"
RR DERAILLEUR .....Shimano Nexave 400
CRANKSET ....Shimano Nexave T303 48/38/28, w/chainguard
Bolt hole circle, mm Riveted
BB ....Cartridge
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 ......Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
FRONT TIRE ....City tread
Tire size 26 x 1.95
REAR WHEEL ....Shimano Alivio hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
REAR TIRE ....City tread
Tire size 26 x 1.95
SPOKES ....14G stainless
Front, mm 265, 3x
Rear, mm 263/265, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Shock absorber
Outer diameter, mm 27.2
SADDLE ....Oasis Webspring
BRAKES ....Shimano M420, V type w/Modulator
PEDALS ....Platform, dual density
Axle diameter 9/16"
SEAT BINDER ....Alloy w/quick release
Inner diameter, mm 31.9
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

Bontrager rims- light, strong, smooth braking

City Tread tires- smooth for speed, and wide for low-pressure comfort

Components

Recreation level- Nexave 400, 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

COLORS

Blue/Silver • Silver/Dark Silver decal • Silver fork

FIT

Frame	Size	S	M	L	XL	M-L
Handlebar	Width, mm	580	580	600	600	580
Stem	Length, mm	110	110	110	110	110
	Angle	45	45	45	45	45
Crank	Length, mm	170	175	175	175	170
Seatpost	Length, mm	350	350	350	350	300
Steerer	Length, mm	163	183	223	263	183

BIKE WEIGHT

34.3 lb.
15.57 kg.

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

Capitola

Beach town just south of Santa Cruz, California.

OUR PRICE:
$ ______

FRAMESET

FRAME ....Hi Tensile steel
FORK ....InSync 178
Travel, mm 45
Axle-crown length, mm 454
HEADSET ....Sealed
Size 25.4/34.0/30.0
Stack height, mm 35.9

CONTROLS

HANDLEBAR ....Alloy, 25° bend, 50mm rise
Clamp diameter, mm 25.4
STEM ....Alloy adjustable rise
SHIFT LEVERS ......Shimano Nexave 400 RapidFire+
BRAKE LEVERS .....Integrated brake/shift
GRIPS ....Comfort

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
Cable routing Down pull
Attachment 34.9 mm/ 1 3/8"
RR DERAILLEUR .....Shimano Nexave 400
CRANKSET ....Shimano Nexave T303 48/38/28, w/chainguard
Bolt hole circle, mm Riveted
BB ....Cartridge
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 ......Alloy, QR hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
FRONT TIRE ....City tread
Tire size 26 x 1.95
REAR WHEEL ....Shimano Alivio hub, 32°, Bontrager Corvair rim
E.R.D., mm 542
Rim strip Velox 19mm
REAR TIRE ....City tread
Tire size 26 x 1.95
SPOKES ....14G stainless
Front, mm 265, 3x
Rear, mm 263/265, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Shock absorber
Outer diameter, mm 27.2
SADDLE ....Oasis Webspring
BRAKES ....Shimano M420, V type w/Modulator
PEDALS ....Platform, dual density
Axle diameter 9/16"
SEAT BINDER ....Alloy w/quick release
Inner diameter, mm 31.9
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

Steel- strong and durable

Wheelset

Bontrager rims- light, strong, smooth braking

City Tread tires- smooth for speed, and wide for low-pressure comfort

Components

Recreation level- Nexave 400, 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

COLORS

Red/Silver • Silver/Dark Silver decal • Silver fork

FIT

Frame	Size	S	M	L	XL	M-L
Handlebar	Width, mm	580	580	600	600	580
Stem	Length, mm	110	110	110	110	110
	Angle	45	45	45	45	45
Crank	Length, mm	170	175	175	175	170
Seatpost	Length, mm	350	350	350	350	300
Steerer	Length, mm	163	183	223	163	183

BIKE WEIGHT

34.3 lb.
15.57 kg.

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

City/Path Series

For 2001

These frames remain unchanged from 2000.

Geometry

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.

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 (see page 7). 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.

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

Utopia

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

OUR PRICE:
$ ________

FRAMESET

FRAME ....Silver series 7005 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 HAS
Steerer clamp height, mm 41.0
SHIFT LEVERS ......Shimano Alivio RapidFire+
BRAKE LEVERS .....Alloy, direct pull
GRIPS ....WTB Dual Compound Trail Grips

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
Cable routing Top pull
Attachment 34.9 mm/1 3/8"
RR DERAILLEUR .....Shimano Deore LX SGS
CRANKSET ....Shimano Nexave 401 48/38/28
Bolt hole circle, mm 79
BB ....Shimano BB-LP27
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 ......Rolf Vector, 20°
E.R.D., mm 592
Rim strip Velox 16mm
FRONT TIRE ....IRC Duro Tour
Tire size 700 x 35c
REAR WHEEL ....Rolf Vector, 24°
E.R.D., mm 592
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 288/287, 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

FIT

Frame	Size	S	M	L	XL
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	190.2	205.2	205.2	225.2

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

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

Duro-Tour tires- fast, and tough

Components

Enthusiast level- LX, Nexave 400, Rolf

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

Suspension fork- smoothens the ride

COLORS

Titanium/Silver • Titanium/Black decal • Silver fork

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

26.6 lb.
12.08 kg.

Nirvana

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

OUR PRICE:
$ ________

FRAMESET

FRAME ....Silver series 7005 aluminum
FORK ....Cro-Moly
Axle-crown length, mm 398
HEADSET ....Sealed
Size 25.4/34.0/30.0
Stack height, mm 35.9

CONTROLS

HANDLEBAR ....Steel, 60mm rise
Clamp diameter, mm 25.4
STEM ....Alloy quick change, quill
SHIFT LEVERS ......GripShift Centera
BRAKE LEVERS .....Alloy, direct pull
GRIPS ....Oasis, dual density

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
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-CS15
Shell x axle, mm 73 x 122.5, Square
CHAIN HG50
Chain type 3/32"
Chain length (links) 112
CASSETTE ....SRAM 5.0 11-32, 8spd

WHEELSET

FRONT WHEEL ......Alloy, QR hub, 32°, Bontrager Fairlane rim
E.R.D., mm 604
Rim strip Velox 19mm
FRONT TIRE ....Invert II
Tire size 700 x 38c
REAR WHEEL ....Shimano C201 hub, 32°, Bontrager Fairlane rim
E.R.D., mm 604
Rim strip Velox 19mm
REAR TIRE ....Invert II
Tire size 700 x 38c
SPOKES ....14G stainless
Front, mm 296, 3x
Rear, mm 293/294, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Suspension
Outer diameter, mm 27.2
SADDLE ....Oasis CRZ+
BRAKES ....Alloy direct pull
PEDALS ....ATB, sealed, Cro-Moly axles
Axle diameter 9/16"
SEAT BINDER ....Alloy w/integral bolt
Inner diameter, mm 31.9
ADDITIONALS ....2 water bottle mounts (1 on XS), 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

COLORS

Candy Red/Titanium • Silver/Black decal • Titanium fork

BIKE WEIGHT

27.7 lb.
12.58 kg.

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

FIT

Frame	Size	XS	S	M	L	XL	W-M
Handlebar	Width, mm	580	580	580	580	580	580
Stem	Length, mm	90	90	110	110	110	90
	Angle	40	40	40	40	40	40
Crank	Length, mm	170	170	170	170	170	170
Seatpost	Length, mm	300	300	350	350	350	300
Steerer	Length, mm	127.9	127.9	142.9	142.9	162.9	162.9

Zebrano

A zebra-striped African hardwood of unusual beauty.

OUR PRICE:
$ ________

FRAMESET

FRAME ....Gold series 6061 T6 aluminum
Frame weight 3.5 lb (1.59 gm)
FORK ....Cro-Moly
Travel, mm
Axle-crown length, mm 398
HEADSET ....Sealed
Size 25.4/34.0/30.0
Stack height, mm 35.9

CONTROLS

HANDLEBAR ....Steel, 60mm rise
Clamp diameter, mm 25.4
STEM ....Alloy adjustable rise
SHIFT LEVERS ......Shimano Revo
BRAKE LEVERS .....Alloy, direct pull
GRIPS ....Oasis, dual density

DRIVETRAIN

FT DERAILLEUR .....Shimano Nexave 301
Cable routing Top pull, (W-down)
Attachment 34.9 mm/ 1 3/8"
RR DERAILLEUR .....Shimano C201
CRANKSET ....Shimano C102 48/38/28, w/chainguard
Bolt hole circle, mm Riveted
BB ....Shimano BB-CS15
Shell x axle, mm 73 x 124.5, Square
CHAIN HG50
Chain type 3/32"
Chain length (links) 116
CASSETTE 11-34, 8spd

WHEELSET

FRONT WHEEL ......Alloy, QR hub, 32°, Bontrager Fairlane rim
E.R.D., mm
Rim strip Rubber
FRONT TIRE ....Invert II
Tire size 700 x 38c
REAR WHEEL ....Shimano Acera-X hub, 32°, Bontrager Fairlane
E.R.D., mm
Rim strip Rubber
REAR TIRE ....Invert II
Tire size 700 x 38c
SPOKES ....14G stainless
Front, mm 296, 3x
Rear, mm 292/295, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Suspension
Outer diameter, mm 27.2
SADDLE ....Oasis Webspring
BRAKES ....Alloy direct pull w/modulator
PEDALS ....ATB, sealed, Cro-Moly axles
Axle diameter 9/16"
SEAT BINDER ....Quick release
Inner diameter, mm 31.8
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

Gold series aluminum- durable, and light

Wheelset

Bontrager rim- light for speed, smooth braking

Invert II tires- comfortable width, and tough

Components

Recreation level- Nexave 300, 200

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

Riser bars and adjustable stem- comfort

COLORS

Onyx Black/Titanium • Silver/Dark Silver decal • Titanium fork

BIKE WEIGHT

27.5 lb.
12.49 kg.

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
34	22	30	38

FIT

Frame	Size	S	M	L	XL	W-M
Handlebar	Width, mm	580	580	600	600	580
Stem	Length, mm	90	105	120	135	105
	Angle	15	15	15	15	40
Crank	Length, mm	170	170	170	170	170
Seatpost	Length, mm	300	350	350	350	300
Steerer	Length, mm	127.9	142.9	142.9	162.9	162.9

Tiburon

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

OUR PRICE:
$ ________

FRAMESET

FRAME	Hi Tensile steel	
FORK	Hi Tensile steel	
	Travel, mm	
	Axle-crown length, mm	385
HEADSET	Sealed	
	Size	22.2/30.0/26.4
	Stack height, mm	33.5

CONTROLS

HANDLEBAR	Steel, 50mm rise	
	Clamp diameter, mm	25.4
STEM	Alloy adjustable rise	
SHIFT LEVERS	Shimano C050o	
BRAKE LEVERS	Alloy, direct pull	
GRIPS	Oasis, dual density	

DRIVETRAIN

FT DERAILLEUR	Shimano C102	
	Cable routing	Top pull, (W-down)
	Attachment	31.8 mm/ 1 1/4"
RR DERAILLEUR	Shimano C102	
CRANKSET	Shimano C102 48/38/28, w/chainguard	
	Bolt hole circle, mm	Riveted
BB	Shimano BB-CS15	
	Shell x axle, mm	68 x 124.5, Square
CHAIN	Z51	
	Chain type	3/32"
	Chain length (links)	114
CASSETTE	HG74 13-34, 7spd	

WHEELSET

FRONT WHEEL	Alloy, QR hub, 36°, alloy rim	
	E.R.D., mm	622
	Rim strip	Rubber
FRONT TIRE	Fisher Invert II	
	Tire size	700 x 35c
REAR WHEEL	Alloy QR hub, 36°, alloy rim	
	E.R.D., mm	622
	Rim strip	Rubber
REAR TIRE	Fisher Invert II	
	Tire size	700 x 35c
SPOKES	14G stainless	
	Front, mm	294, 3x
	Rear, mm	291/293, 3x
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Suspension	
	Outer diameter, mm	27.2
SADDLE	Oasis Webspring	
BRAKES	Alloy direct pull	
PEDALS	ATB, sealed, Cro-Moly axles	
	Axle diameter	9/16"
SEAT BINDER	Quick release, 47mm	
ADDITIONALS	2 water bottle mounts, rack mounts	

FIT

		S	M	L	XL	W-M
Frame	Size					
Handlebar	Width, mm	580	580	600	600	600
Stem	Length, mm	110	110	110	110	110
	Angle	45	45	45	45	45
Crank	Length, mm	170	170	170	170	170
Seatpost	Length, mm	350	350	350	350	350
Steerer	Length, mm	127	127	137	177	157

Why this Fisher rocks:

Rider: Commuter, urban adventure, or Day tourer

Frameset

Hybrid geometry- mountain style comfort, road style responsiveness

Steel- strong and durable

Wheelset

Alloy rims- light for speed

Quick release front and rear- easy to load into a car to go to your favorite riding area

Invert II tires- comfortable width, and tough

Components

Recreation level- Shimano hybrid group

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

Riser bars and adjustable stem- comfort

COLORS

Blue/Titanium • Silver/Dark Silver decal • Titanium fork

BIKE WEIGHT

30.3 lb.
13.76 kg.

GEARING

	28	38	48
13	59	80	101
15	51	69	87
17	45	61	77
19	40	54	69
22	35	47	59
26	29	40	50
34	22	30	38

For 2001

These Fishers will fit both smaller adults and kids. They have been very well accepted because they ride great, and remain unchanged for 2001.

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 so 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.

Joshua 24

	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
INCHES	Standover	
	Seat tube	15.0
	Head tube	3.9
	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
INCHES	Standover	23.9	21.7
	Seat tube	13.2	13.2
	Head tube	3.5	3.5
	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

Joshua 24

OUR PRICE: $ ______

FRAMESET

FRAME	Hi Tensile steel	
	Frame weight	*8.8 lb (4.01 gm)*
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	VP H692W	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel, 5° bend, 40mm rise	
	Clamp diameter, mm	*25.4*
STEM	Steel ATB	
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	CS VB888AK, direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release	
	Inner diameter, mm	
ADDITIONALS	1 water bottle mount	

FIT

Frame	Size	S
Handlebar	Width, mm	560
Stem	Length, mm	50
	Angle	15
Crank	Length, mm	162
Seatpost	Length, mm	300
Steerer	Length, mm	126

Why this Fisher rocks:

Rider: Aggressive youth or smaller adult singletrack 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, SR

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

COLORS

Dark Blue/Yellow

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.

Mt Jam

OUR PRICE: $ ______

FRAMESET

FRAME	Hi Tensile steel w/CroMoly seat tube	
	Frame weight	*6.8 lb (3.10 gm)*
FORK	RST 281	
	Travel, mm	*63*
	Axle-crown length, mm	*410*
HEADSET	VP H992W	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel, 5° bend	
	Clamp diameter, mm	*25.4*
STEM	Steel ATB	
SHIFT LEVERS	GripShift MRX-170	
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 Tourney TY30	
CRANKSET	SR XR17 42/34/24	
	Bolt hole circle, mm	*Riveted*
BB	VP-B33W	
	Shell x axle, mm	*73 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°, 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		CS VB888AK, direct pull
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release	
ADDITIONALS	1 water bottle mount, rear derailleur guard, kickstand	

FIT

Frame	Size	13
Handlebar	Width, mm	560
Stem	Length, mm	50
	Angle	15
Crank	Length, mm	162
Seatpost	Length, mm	300
Steerer	Length, mm	126

Why this Fisher rocks:

Rider: Aggressive youth or smaller adult singletrack 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, SR

Suspension fork- smoothens the bumps, adds control

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

COLORS

Dark Blue/Red

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.

Tyro

FRAMESET		
FRAME	Hi Tensile steel w/CroMoly seat tube	
	Frame weight	*6.8 lb (3.10 gm)*
FORK	Hi Tensile steel	
	Travel, mm	
	Axle-crown length, mm	*410*
HEADSET	VP H992W	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS		
HANDLEBAR	Steel, 5° bend	
	Clamp diameter, mm	*25.4*
STEM	Steel ATB	
SHIFT LEVERS	GripShift MRX-170	
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 Tourney TY30	
CRANKSET	SR XR17 42/34/24	
	Bolt hole circle, mm	*Riveted*
BB	VP-B33W	
	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°, 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	CS VB888AK, direct pull	
PEDALS	Wellgo LU945	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release	
ADDITIONALS	1 water bottle mount, rear derailleur guard, kickstand	

FIT			
Frame	Size	13B	13G
Handlebar	Width, mm	560	560
Stem	Length, mm	50	50
	Angle	15	15
Crank	Length, mm	162	162
Seatpost	Length, mm	300	300
Steerer	Length, mm	126	126

OUR PRICE:
$ ________

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, SR

Size specific- parts fit smaller rider for improved comfort, control

Direct pull brakes- extra stopping power

COLORS

Black/Blue
Dark Purple/Light Purple

BIKE WEIGHT

31.9 lb.
14.48 kg.

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

For 2001

These 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

OUR PRICE: $ ______

FRAMESET

FRAME ....Hi-Tensile w/ Cro-Moly down tube
FORK ....1 3/8" tapered
  Axle-crown length, mm 286
HEADSET ....Dia-Compe SE-1 Aheadset
  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 .....CS VL-211D
GRIPS ....Bontrager BMX

DRIVETRAIN

CRANKSET ....1-pc. Cro-Moly, 2 pc. spider/ring
  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 16

WHEELSET

FRONT WHEEL ......Alloy nutted hub, 48°, 3/8 axle, Btrgr Bruiser rim
  E.R.D., mm 406
  Rim strip PVC
FRONT TIRE ....Bontrager Revolt ST-2
  Tire size 20 x 2.1
REAR WHEEL ....Alloy nutted hub, 48°, 3/8 axle, Btrgr Bruiser rim
  E.R.D., mm 406
  Rim strip PVC
REAR TIRE ....Bontrager Revolt ST-2
  Tire size 20 x 1.75
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 ....CS 932A U-brake
PEDALS ....Alloy BMX
  Axle diameter 1/2"
SEAT BINDER ....Alloy w/integral bolt
  Inner diameter, mm 28.6

FIT

Frame	Size	Pro
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	300
Steerer	Length, mm	160

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

COLORS

Black

GEARING

	44
16	55

Mullet

OUR PRICE: $ ______

FRAMESET

FRAME ....Cro-Moly steel
FORK ....1 3/8" Cro-Moly
  Axle-crown length, mm 286
HEADSET ....Dia-Compe SST
  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 .....CS VL-211D
GRIPS ....Bontrager BMX

DRIVETRAIN

CRANKSET ....1-pc. CroMoly, 2 pc. spider/ring
  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 16

WHEELSET

FRONT WHEEL ......Alloy, nutted hub, 48°, Btrgr Bruiser rim
  E.R.D., mm 406
  Rim strip PVC
FRONT TIRE ....Bontrager Revolt ST-2
  Tire size 20 x 2.1
REAR WHEEL ....Alloy, nutted hub, 48°, Btrgr Bruiser rim
  E.R.D., mm 406
  Rim strip PVC
REAR TIRE ....Bontrager Revolt ST-2
  Tire size 20 x 1.75
SPOKES ....14G UCP
  Front, mm 185, 4x
  Rear, mm 183/183, 4x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Alloy micro-adjust
  Outer diameter, mm 25.4
SADDLE ....Bontrager FS10 BMX
BRAKES ....CS 932A U-brake
PEDALS ....Alloy BMX
  Axle diameter 1/2"
SEAT BINDER ....Alloy w/integral bolt
  Inner diameter, mm 28.6

FIT

Frame	Size	Pro
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	300
Steerer	Length, mm	160

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

COLORS

Metallic Silver

GEARING

	44
16	55

Stiff

OUR PRICE: $ ______

FRAMESET

FRAME	Cro-Moly steel	
FORK	1 3/8" Cro-Moly	
	Axle-crown length, mm	*286*
HEADSET	Dia-Compe SST	
	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	CS VL-211D	
GRIPS	Bontrager BMX	

DRIVETRAIN

CRANKSET	1-pc. CroMoly, 2 pc. spider/ring	
	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	16	

WHEELSET

FRONT WHEEL	Alloy, nutted hub, 48°, Btrgr Bruiser rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
FRONT TIRE	Bontrager Revolt ST-2	
	Tire size	*20 x 2.1*
REAR WHEEL	Alloy, nutted hub, 48°, Btrgr Bruiser rim	
	E.R.D., mm	*406*
	Rim strip	*PVC*
REAR TIRE	Bontrager Revolt ST-2	
	Tire size	*20 x 1.75*
SPOKES	14G UCP	
	Front, mm	*185, 4x*
	Rear, mm	*183/183, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*25.4*
SADDLE	Bontrager FS10 BMX	
BRAKES	CS 932A U-brake	
PEDALS	Alloy BMX	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*

FIT

Frame	Size	Pro
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	300
Steerer	Length, mm	184

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

COLORS

Black

GEARING

	44
16	55

Rig

OUR PRICE: $ ______

FRAMESET

FRAME	Hi Tensile steel w/CroMoly seat tube	
FORK	1 3/8" Cro-Moly	
	Axle-crown length, mm	*280*
HEADSET	Dia-Compe SE-1 Aheadset	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*25.5*

CONTROLS

HANDLEBAR	Freestyle	
	Clamp diameter, mm	*22.2*
STEM	Alloy Ahead type	
	Steerer clamp height, mm	*31.8*
BRAKE LEVERS	CS VL-211D	
GRIPS	Bontrager dual density	

DRIVETRAIN

CRANKSET	1-pc. Cro-Moly, 2 pc. spider/ring	
	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	16	

WHEELSET

FRONT WHEEL	Alloy nutted hub, 48°, 3/8 axle, Alloy rim	
	E.R.D., mm	*422*
	Rim strip	*PVC*
FRONT TIRE	LHR Freestyle	
	Tire size	*20 x 1.95*
REAR WHEEL	Alloy, nutted hub, 48°, 1/2 axle, Alloy rim	
	E.R.D., mm	*422*
	Rim strip	*PVC*
REAR TIRE	LHR Freestyle	
	Tire size	*20 x 1.95*
SPOKES	14G UCP	
	Front, mm	*184, 4x*
	Rear, mm	*183/183, 4x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Steel	
	Outer diameter, mm	*25.4*
SADDLE	Fisher Padded	
BRAKES	CS 932A U-brake	
PEDALS	Platform	
	Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*28.6*
ADDITIONALS	Odyssey Gyro 2 rotor	

FIT

Frame	Size	Air
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	300
Steerer	Length, mm	184

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

Components

Name brand parts- quality and durability

Steel parts- high strength, durable

COLORS

Blue

Green

GEARING

	44
16	55

Spike

OUR PRICE:
$ ________

FRAMESET

FRAME	Hi Tensile steel w/CroMoly seat tube		
FORK	1 3/8" tapered		
		Axle-crown length, mm	*280*
HEADSET	VP H755		
		Size	*21.2/32.5/26.4*
		Stack height, mm	*40.5*

CONTROLS

HANDLEBAR	Freestyle		
		Clamp diameter, mm	*22.2*
STEM	4 bolt BMX, alloy top		
BRAKE LEVERS	CS VL-211D		
GRIPS	Bontrager dual density		

DRIVETRAIN

CRANKSET	One-piece type		
		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	16		

WHEELSET

FRONT WHEEL	Steel hub, 48°, Aluminum alloy rim		
		E.R.D., mm	*422*
		Rim strip	*PVC*
FRONT TIRE	LHR Freestyle		
		Tire size	*20 x 1.95*
REAR WHEEL	Steel hub, 48°, Aluminum alloy rim		
		E.R.D., mm	*422*
		Rim strip	*PVC*
REAR TIRE	LHR Freestyle		
		Tire size	*20 x 1.95*
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 Padded		
BRAKES	Tektro 984AFS		
PEDALS	Platform		
		Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt		
		Inner diameter, mm	*28.6*
ADDITIONALS	Odyssey Gyro 2 rotor		

FIT

Frame	Size	All Around
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	175
Seatpost	Length, mm	300
Steerer	Length, mm	174

Why this Fisher rocks:

Rider: Aggressive BMX rider or Racer

Frameset

Steel- strong and durable

Massive tubes- stiff for jumping, slight flex for berm shots

Wheelset

Alloy rims w/48 spokes- light, but tough

Components

Steel parts- high strength, durable

COLORS

Mustard
Black

GEARING

	44
16	55

Woody

OUR PRICE:
$ ________

FRAMESET

FRAME	Hi Tensile steel w/CroMoly seat tube		
FORK	1 3/8" tapered		
		Axle-crown length, mm	*280*
HEADSET	VP H755		
		Size	*21.2/32.5/26.4*
		Stack height, mm	*40.5*

CONTROLS

HANDLEBAR	Freestyle		
		Clamp diameter, mm	*22.2*
STEM	4 bolt BMX, alloy top		
		Steerer clamp height, mm	
BRAKE LEVERS	CS VL-211D		
GRIPS	Bontrager dual density		

DRIVETRAIN

CRANKSET	One-piece type		
		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	16		

WHEELSET

FRONT WHEEL	Steel hub, 48°, Aluminum alloy rim		
		E.R.D., mm	*422*
		Rim strip	*PVC*
FRONT TIRE	LHR Freestyle		
		Tire size	*20 x 1.95*
REAR WHEEL	Steel hub, 48°, Aluminum alloy rim		
		E.R.D., mm	*422*
		Rim strip	*PVC*
REAR TIRE	LHR Freestyle		
		Tire size	*20 x 1.95*
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 Padded		
BRAKES	Tektro 984AFS		
PEDALS	Platform		
		Axle diameter	*1/2"*
SEAT BINDER	Alloy w/integral bolt		
		Inner diameter, mm	*28.6*
ADDITIONALS	Odyssey Gyro 2 rotor		

FIT

Frame	Size	All Around
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	175
Seatpost	Length, mm	300
Steerer	Length, mm	174

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

COLORS

Metallic Silver
Red

GEARING

	44
16	55

Air Bob

OUR PRICE: $ ______

FRAMESET		
FRAME	Cro-Moly steel	
FORK	1 3/8" Cro-Moly	
	Axle-crown length, mm	280
HEADSET	Dia-Compe SST Aheadset	
	Size	25.4/34.0/30.0
	Stack height, mm	25.5

CONTROLS		
HANDLEBAR	Freestyle CroMoly	
	Clamp diameter, mm	22.2
STEM	Alloy Ahead type	
	Steerer clamp height, mm	31.7
BRAKE LEVERS	CS VL-211D	
GRIPS	Bontrager dual density	

DRIVETRAIN		
CRANKSET	1-pc. Cro-Moly, 2 pc. spider/ring	
	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	16	

WHEELSET		
FRONT WHEEL	Alloy nutted hub, 48°, 1/2 axle, Alex Alpha rim	
	E.R.D., mm	406
	Rim strip	PVC
FRONT TIRE	LHR Freestyle	
	Tire size	20 x 1.95
REAR WHEEL	Alloy nutted hub, 48°, 1/2 axle, Alex Alpha rim	
	E.R.D., mm	406
	Rim strip	PVC
REAR TIRE	LHR Freestyle	
	Tire size	20 x 1.95
SPOKES	14G UCP	
	Front, mm	183, 4x
	Rear, mm	182/182, 4x
INNER TUBES	Schraeder valve	

OTHER		
SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	25.4
SADDLE	Fisher Padded	
BRAKES	CS 932A U-brake	
PEDALS	Platform	
	Axle diameter	1/2"
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	28.6
ADDITIONALS	Fishbone UFO rotor, Fisher pegs front and rear	

FIT		
Frame	Size	Air
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	180
Seatpost	Length, mm	300
Steerer	Length, mm	184

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

Alloy rims, 48 spokes- super tough, good stopping

Components

Freestyle parts- rotor and pegs

Steel parts- durability

COLORS

Metallic Silver

GEARING	
	44
16	55

Mr. Skinner

OUR PRICE: $ ______

FRAMESET		
FRAME	Hi Tensile steel	
FORK	1 3/8" tapered	
	Axle-crown length, mm	286
HEADSET	VP H755	
	Size	21.2/32.5/26.4
	Stack height, mm	40.5

CONTROLS		
HANDLEBAR	Fisher	
	Clamp diameter, mm	22.2
STEM	4 bolt BMX, alloy top	
BRAKE LEVERS	CS VL-211D	
GRIPS	Bontrager BMX	

DRIVETRAIN		
CRANKSET	1-pc. type, 2 pc. spider/ring	
	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	16	

WHEELSET		
FRONT WHEEL	Steel hub, 36°, 3/8 axle, Btrgr Bruiser rim	
	E.R.D., mm	406
	Rim strip	PVC
FRONT TIRE	Bontrager Revolt ST-2	
	Tire size	20 x 2.1
REAR WHEEL	Steel hub, 36°, 3/8 axle, Btrgr Bruiser rim	
	E.R.D., mm	406
	Rim strip	PVC
REAR TIRE	Bontrager Revolt ST-2	
	Tire size	20 x 1.75
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	CS VB888AK, direct pull	
PEDALS	Platform	
	Axle diameter	1/2"
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	28.6

FIT		
Frame	Size	Expert
Handlebar	Width, mm	685
Stem	Length, mm	55
	Angle	0
Crank	Length, mm	175
Seatpost	Length, mm	300
Steerer	Length, mm	174

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

COLORS

Red

Metallic Silver

GEARING	
	44
16	55

Kids'

For 2001

These 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

OUR PRICE:
$ ______

FRAMESET

FRAME	Hi Tensile steel	
	Frame weight	*4.0 lb (1.80 gm)*
FORK	Hi Tensile steel	
	Axle-crown length, mm	*282*
HEADSET	VP H992W	
	Size	*25.4/34.0/30.0*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	Steel, 5° bend, 40mm rise	
	Clamp diameter, mm	*25.4*
STEM	ATB	
SHIFT LEVERS	SR 225, right only	
BRAKE LEVERS	CS VL-313D	
GRIPS	Kraton	

DRIVETRAIN

RR DERAILLEUR	Shimano Tourney TY22	
CRANKSET	Three-piece type w/chainguard, 38T	
	Bolt hole circle, mm	*Riveted*
BB	VP-B33W	
	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	Bontrager Revolt ST-2	
	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	Bontrager Revolt ST-2	
	Tire size	*20 x 1.75*
SPOKES	14G UCP	
	Front, mm	*192, 3x*
	Rear, mm	*189/191, 3x*
INNER TUBES	Schraeder valve	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*27.2*
SADDLE	Padded	
BRAKES	CS VB888AK, direct pull	
PEDALS	Platform	
	Axle diameter	*9/16"*
SEAT BINDER	Quick release, 47mm	
ADDITIONALS	Rear derailleur guard, double chainring guards, kickstand	

FIT

Frame	Size	12B	12G
Standover	Inches	22.1	19.9
	Cm	56.2	50.5
Handlebar	Width, mm	580	580
Stem	Length, mm	40	40
	Angle	15	15
Crank	Length, mm	140	140
Seatpost	Length, mm	300	250
Steerer	Length, mm	125	125

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

Size specific fit parts- more comfortable, easier to control

COLORS

Black/Yellow
Aqua/Blue

BIKE WEIGHT

26.0 lb.
11.80 kg.

GEARING

	38
14	55
16	48
18	42
21	36
24	32
28	27

Comet

OUR PRICE:
$ ________

FRAMESET

FRAME ....Hi Tensile steel
Frame weight *4.0 lb (1.80 gm)*
FORK ....Hi Tensile steel
Axle-crown length, mm *282*
HEADSET ....VP H732
Size *22.2/30.0/27.0*
Stack height, mm *35.0*

CONTROLS

HANDLEBAR ....Steel, 5° bend, 40mm rise
Clamp diameter, mm *25.4*
STEM ....ATB
BRAKE LEVERS .....CS VL-313D, right only
GRIPS ....Kraton

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, 32°, Steel rim
E.R.D., mm *422*
Rim strip *PVC*
FRONT TIRE ....Bontrager Revolt ST-2
Tire size *20 x 2.1*
REAR WHEEL ....Coaster brake hub, 32°, Steel rim
E.R.D., mm *422*
Rim strip *PVC*
REAR TIRE ....Bontrager Revolt ST-2
Tire size *20 x 1.75*
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 ....CS VB888AK, direct pull
PEDALS ....Platform
Axle diameter *9/16"*
SEAT BINDER ....Quick release, 47mm
ADDITIONALS ....Rear derailleur guard, double chainring guards, kickstand

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

COLORS

Black/Green
Pink/Light Pink

FIT

Frame	Size	12B	12G
Standover	Inches	22.1	19.9
	Cm	56.2	50.5
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	125	125

BIKE WEIGHT

26.0 lb.
11.80 kg.

GEARING

	36
19	38

Gamma Ray

OUR PRICE:
$ ________

FRAMESET

FRAME ....Hi Tensile steel
Frame weight *25.3 lb (11.50 gm)*
FORK ....Hi Tensile steel
Axle-crown length, mm *254*
HEADSET ....VP H732W
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
BRAKE LEVERS .....Vanguard, right only
GRIPS ....Mushroom

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, 28°, Steel rim
E.R.D., mm *321*
Rim strip *PVC*
FRONT TIRE ....Comp III Type
Tire size *16 x 2.125*
REAR WHEEL ....Coaster brake hub, 28°, Steel rim
E.R.D., mm *321*
Rim strip *PVC*
REAR TIRE ....Comp III Type
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 ....
PEDALS ....Platform
Axle diameter *1/2"*
SEAT BINDER ....Bolt
ADDITIONALS ....Training wheels, chainguard, 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

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

COLORS

Red
Pink

FIT

Frame	Size	9B	9G
Standover	Inches	17.1	16.1
	Cm	43.5	41.0
Handlebar	Width, mm	510	510
Stem	Length, mm	50	50
	Angle	0	0
Crank	Length, mm	114	114
Seatpost	Length, mm	255	255
Steerer	Length, mm	128	128

GEARING

	32
19	26

Sun Spot

OUR PRICE:
$ ________

FRAMESET

FRAME ....Hi Tensile steel
Frame weight 3.4 lb (1.56 gm)
FORK ....Hi Tensile steel
Axle-crown length, mm 282
HEADSET ....VP H732
Size 22.2/30.0/27.0
Stack height, mm 35.0

CONTROLS

HANDLEBAR ....BMX
Clamp diameter, mm 22.2
STEM ....4 bolt BMX
GRIPS ....Fisher Paw design

DRIVETRAIN

CRANKSET ....One-piece type, 28T
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, 20°, Steel rim
E.R.D., mm 220
Rim strip PVC
FRONT TIRE ....Fisher Paw
Tire size 12 x 2.125
REAR WHEEL ....Coaster brake hub, 20°, Steel rim
E.R.D., mm 220
Rim strip PVC
REAR TIRE ....Fisher Paw
Tire size 12 x 2.125
SPOKES ....14G UCP
Front, mm 75, 3x
Rear, mm 86, 3x
INNER TUBES ....Schraeder valve

OTHER

SEATPOST ....Steel
Outer diameter, mm 22.2
SADDLE ....Fisher Paw design
BRAKES ....
PEDALS ....Platform
Axle diameter 1/2"
SEAT BINDER ....Bolt, M6 x 30
ADDITIONALS ....Training wheels, chainguard, fenders, and pads

FIT

Frame	Size	8	8G
Standover	Inches	15.6	15.6
	Cm	39.6	39.6
Handlebar	Width, mm	480	480
Stem	Length, mm	50	50
	Angle	0	0
Crank	Length, mm	89	89
Seatpost	Length, mm	255	255
Steerer	Length, mm	123	123

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

COLORS

Blue
Purple

BIKE WEIGHT

20.9 lb.
9.49 kg.

GEARING

	28
19	17

New for 2001

The big news in the LeMond line for this year is our introduction of Titanium framesets (see Comparing Materials on pages 2-3 and "Titanium", pages 4-6).

In addition to new materials, there has also been a slight redesign to the parts. Most noticeable of these is the taller head tube housing an integral headset bearing system. Included in this updated design is the new oversize steering system and 1 1/8" headsets (see page 20).

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. See page 11 for a more detailed description.

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 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.

	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

Tete de Course

OUR PRICE:
$ ______

FRAMESET

- FRAME ....Reynolds titanium, double butted
  - *Frame weight* — *3.1 lb (1.41 gm)*
- FORK ....ICON Air Rail OD
  - *Axle-crown length, mm* — *371*
- HEADSET ....LeMond Internal
  - *Size* — *25.4/34.0/30.0*
  - *Stack height, mm* — *8.0*

CONTROLS

- HANDLEBAR ....3TTT Forma SL
  - *Clamp diameter, mm* — *26.0*
- STEM ....3TTT Forgie, direct connect
  - *Steerer clamp height, mm* — *41.0*
- SHIFT LEVERS ......Shimano Dura-Ace STI, Flite Deck compatible
- BRAKE LEVERS .....Integrated brake/shift
- GRIPS ....ICON 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*
- CHAIN ....Shimano Dura-Ace
  - *Chain type* — *9 speed*
  - *Chain length (links)* — *108*
- CASSETTE ....Shimano Dura-Ace 12-23, 9spd

WHEELSET

- FRONT WHEEL ......Rolf Sestriere, 20°
  - *E.R.D., mm* — *592*
  - *Rim strip* — *Velox 16mm*
- FRONT TIRE ....Michelin Axial Pro K, folding
  - *Tire size* — *700 x 23c*
- REAR WHEEL ....Rolf Sestriere, 24°
  - *E.R.D., mm* — *592*
  - *Rim strip* — *Velox 16mm*
- REAR TIRE ....Michelin Axial Pro K, folding
  - *Tire size* — *700 x 23c*
- SPOKES ....DT Revolution 14/17G, alloy nipples
  - *Front, mm* — *278, Radial*
  - *Rear, mm* — *288, 2x*
- INNER TUBES ......Presta valve, 48mm stem

OTHER

- SEATPOST ....LeMond
  - *Outer diameter, mm* — *27.2*
- SADDLE ....SSM Era, Ti/leather
- BRAKES ....Shimano Dura-Ace
- PEDALS ....-not supplied-
  - *Axle diameter* — *9/16"*
- SEAT BINDER ......Stainless steel 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

Rolf Sestrieres- incredibly light, yet strong with PST™

Michelin Axial Pro K tires- super fast rolling

Components

Pro level- Dura-Ace, 3TTT

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

16.9 lb.
7.67 kg.

COLORS

Brushed / Black painted panel • Black fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	66	68	70	72	73	75	77
	Cm	166	172	177	182	187	191	196
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

Victoire

OUR PRICE:
$ ______

FRAMESET

- FRAME ....Reynolds titanium, double butted
  - *Frame weight* — *3.1 lb (1.41 gm)*
- FORK ....ICON Air Rail OD
  - *Axle-crown length, mm* — *371*
- HEADSET ....LeMond Internal
  - *Size* — *25.4/34.0/30.0*
  - *Stack height, mm* — *8.0*

CONTROLS

- HANDLEBAR ....3TTT Forma SL
  - *Clamp diameter, mm* — *26.0*
- STEM ....3TTT Forgie, direct connect
  - *Steerer clamp height, mm* — *41.0*
- SHIFT LEVERS ......Shimano Ultegra STI, Flite Deck compatible
- BRAKE LEVERS .....Integrated brake/shift
- GRIPS ....ICON 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*
- CHAIN ....Shimano HG-92
  - *Chain type* — *9 speed*
  - *Chain length (links)* — *108*
- CASSETTE ....Shimano Ultegra 12-25, 9spd

WHEELSET

- FRONT WHEEL ......Rolf Vector Comp, 18°
  - *E.R.D., mm* — *592*
  - *Rim strip* — *Velox 16mm*
- FRONT TIRE ....Michelin Axial Pro K, folding
  - *Tire size* — *700 x 23c*
- REAR WHEEL ....Rolf Vector Comp, 20°
  - *E.R.D., mm* — *592*
  - *Rim strip* — *Velox 16mm*
- REAR TIRE ....Michelin Axial Pro K, folding
  - *Tire size* — *700 x 23c*
- SPOKES ....DT Aero 2.0/1.3
  - *Front, mm* — *270, Radial*
  - *Rear, mm* — *290/288, 2x*
- INNER TUBES ......Presta valve, 48mm stem

OTHER

- SEATPOST ....LeMond
  - *Outer diameter, mm* — *27.2*
- SADDLE ....SSM Era, CrMo/leather
- BRAKES ....Shimano Ultegra
- PEDALS ....-not supplied-
  - *Axle diameter* — *9/16"*
- SEAT BINDER ......Stainless steel 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

Rolf wheelset- aerodynamic for speed, strong and low maintenance with PST™

Michelin Axial Pro K 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 / Red painted panel • Black fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	66	68	70	72	73	75	77
	Cm	166	172	177	182	187	191	196
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

LeMond Aeroluminum

For 2001

This frame was introduced for the 2000 model line, and instantly become the racer's favorite. Team Saturn looked great on theirs leading the filed across the finish line.

Geometry

The Aeroluminum LeMond models use Greg's proven geometry, like all LeMond models. All LeMond bikes ride really, really well, because we've used the same geometry for all of them. See page 11 for a more detailed description.

Ride

Some aluminum bikes only have one thing to brag about; stiffness. While having an efficient drivetrain is a good thing, an excessively stiff frame actually slows you down through vibration fatigue and interrupting your pedal stroke.

We took great pains to make our aluminum road bike worthy of Greg's race itinerary, and they ride like classic LeMonds. These bikes climb and sprint great, but we tuned the tubing shapes and wall thicknesses to create an aluminum frame that Greg would still smile about after 200 kilometers.

Still, this is our lightest frameset. And it's our best for sprinting, hard efforts, and bigger riders.

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 this our lightest frameset (see Comparing Materials on pages 2-3 and Aluminum, page 7).

We use an outer-butted head tube which provides 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. Its also aerodynamic, cheating the wind with its wind-shaped cross section.

All LeMond road bikes have 2 water bottle mounts.

	Frame sizes	50	53	55	58	61
	Head angle	72.5	73.0	73.5	73.5	74.0
	Seat angle	74.0	73.3	73.0	72.5	72.0
MILLIMETERS	Standover	763	789	808	835	862
	Seat tube	533	563	583	613	642
	Head tube	97	121	137	165	191
	Eff top tube	525	545	565	585	605
	Chainstays	412	415	415	418	418
	BB height	266	266	266	266	266
	Offset	47	47	43	43	43
	Trail	58	55	56	56	53
	Wheelbase	973	984	993	1010	1019
INCHES	Standover	30.0	31.1	31.8	32.9	33.9
	Seat tube	21.0	22.2	22.9	24.1	25.3
	Head tube	3.8	4.8	5.4	6.5	7.5
	Eff top tube	20.7	21.5	22.2	23.0	23.8
	Chainstays	16.2	16.3	16.3	16.5	16.5
	BB height	10.5	10.5	10.5	10.5	10.5
	Offset	1.9	1.9	1.7	1.7	1.7
	Trail	2.3	2.1	2.2	2.2	2.1
	Wheelbase	38.3	38.7	39.1	39.8	40.1

Chambery

OUR PRICE:
$ ______

FRAMESET

FRAME	Aeroluminum	
	Frame weight	*3.0 lb (1.36 gm)*
FORK	ICON Air Rail	
	Axle-crown length, mm	*371*
HEADSET	Cane Creek S-2 Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3TTT Forma SL	
	Clamp diameter, mm	*26.4*
STEM	3TTT Forgie, direct connect, with shim to 1"	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	ICON Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Ultegra	
	Cable routing	*Down pull*
	Attachment	*Braze-on type*
RR DERAILLEUR	Shimano Ultegra	
CRANKSET	Shimano Ultegra 53/39	
	Bolt hole circle, mm	*135*
BB	Shimano Ultegra	
	Shell x axle, mm	*68 x 109.5, Splined*
CHAIN	Shimano HG-92	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd	

WHEELSET

FRONT WHEEL	Rolf Vector Comp, 18°	
	E.R.D., mm	*575*
	Rim strip	*Velox 16mm*
FRONT TIRE	Michelin Axial Pro K, folding	
	Tire size	*700 x 23c*
REAR WHEEL	Rolf Vector Comp, 20°	
	E.R.D., mm	*575*
	Rim strip	*Velox 16mm*
REAR TIRE	Michelin Axial Pro K, folding	
	Tire size	*700 x 23c*
SPOKES	DT Aero 2.0/1.3	
	Front, mm	*270, Radial*
	Rear, mm	*290/288, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond	
	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, rack mounts (no rack on 47)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Aeroluminum- extra rigidity for sprints, efficient climbing

Wheelset

Rolf Vector Comp wheels- aerodynamic for speed, strong and low maintenance with PST™

Michelin Axial Pro K 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

19.1 lb.
8.67 kg.

COLORS

Black/Red • White/Yellow decals • Red fork

FIT

Frame	Size	50	53	55	58	61
Rider height	Inches	66	70	72	75	77
	Cm	169	178	182	189	196
Handlebar	Width, mm	420	440	440	460	460
Stem	Length, mm	90	110	110	120	130
	Angle	10	10	10	10	10
Crank	Length, mm	170	172.5	175	175	175
Seatpost	Length, mm	250	250	250	250	250
Steerer	Length, mm	200.0	224.5	240.0	268.5	294.5

Alpe d'Huez

OUR PRICE:
$ ________

FRAMESET

FRAME	Aeroluminum	
	Frame weight	*3.0 lb (1.36 gm)*
FORK	ICON Carbon Classic	
	Axle-crown length, mm	*371*
HEADSET	VP Modus, alloy	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*36.0*

CONTROLS

HANDLEBAR	3TTT Start	
	Clamp diameter, mm	*26.4*
STEM	Alloy quick change, quill	
SHIFT LEVERS	Shimano 105 STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	ICON Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano 105	
	Cable routing	*Down pull*
	Attachment	*Braze-on type*
RR DERAILLEUR	Shimano 105	
CRANKSET	Shimano 105 53/39	
	Bolt hole circle, mm	*135*
BB	Shimano 105	
	Shell x axle, mm	*68 x 109.5, Splined*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Rolf Vector, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Rolf Vector, 24°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*288/287, 2x*
INNER TUBES	Presta valve	

OTHER

SEATPOST	LeMond	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium, CrMo rails	
BRAKES	Shimano 105	
PEDALS	-not supplied-	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 water bottle mounts, rack mounts (no rack on 47)	

Why LeMond leads the peloton:

Rider: Racer

Frameset

LeMond geometry

Aeroluminum- extra rigidity for sprints, efficient climbing

Wheelset

Rolf Vector wheels- light, strong and low maintenance with PST™

Components

Race level- Shimano 105

9 speed- lots of gears, close together for hard efforts

3TTT bars- light, strong, and comfortable bend

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

19.3 lb.
8.76 kg.

COLORS

Red/White • White/Black decals • White fork

FIT

Frame	Size	50	53	55	58	61
Rider height	Inches	67	70	72	75	77
	Cm	170	178	183	189	196
Handlebar	Width, mm	420	440	440	460	460
Stem	Length, mm	90	110	110	120	130
	Angle	-17	-17	-17	-17	-17
Crank	Length, mm	170	172.5	175	175	175
Seatpost	Length, mm	250	250	250	250	250
Steerer	Length, mm	144.5	169.0	184.5	213.0	239.0

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.

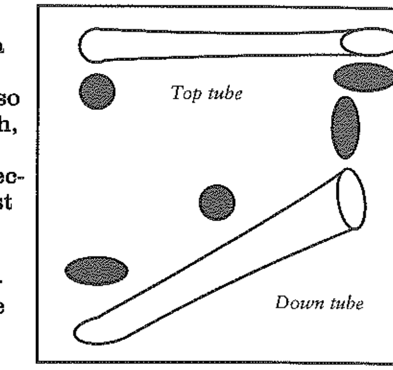

Fig. 12

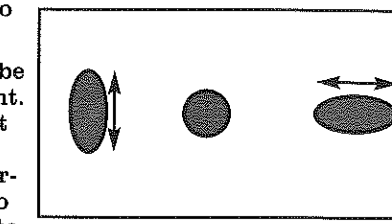

Fig. 13

Even the top tube gets this treatment. The widened front of the top tube increases the lateral stiffness. It also allows the frame to 'splay' more. In other words, the front of the bike can flex a bit fore and aft, adding shock absorption. This flex is not soft enough to react to pedaling forces, but does show up when the front wheel hits a bump, providing extra comfort at both the handlebars and saddle. It's a small detail, but in a long stage race small details add up to overall wins.

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.

	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	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

Maillot Jaune

OUR PRICE:
$ ________

FRAMESET

FRAME	Reynolds 853 Pro		
		Frame weight	*3.3 lb (1.50 gm)*
FORK	ICON Air Rail OD		
		Axle-crown length, mm	*370.0*
HEADSET	Cane Creek S-6 Aheadset		
		Size	*25.4/34.0/30.0*
		Stack height, mm	*27.1*

CONTROLS

HANDLEBAR	3TTT Forma SL		
		Clamp diameter, mm	*26.0*
STEM	3TTT Forgie, direct connect		
		Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Dura-Ace STI, Flite Deck compatible		
BRAKE LEVERS	Integrated brake/shift		
GRIPS	ICON 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*
CHAIN	Shimano Dura-Ace		
		Chain type	*9 speed*
		Chain length (links)	*108*
CASSETTE	Shimano Dura-Ace 12-23, 9spd		

WHEELSET

FRONT WHEEL	Rolf Sestriere, 20°		
		E.R.D., mm	*592*
		Rim strip	*Velox 16mm*
FRONT TIRE	Michelin Axial Pro K, folding		
		Tire size	*700 x 23c*
REAR WHEEL	Rolf Sestriere, 24°		
		E.R.D., mm	*592*
		Rim strip	*Velox 16mm*
REAR TIRE	Michelin Axial Pro K, folding		
		Tire size	*700 x 23c*
SPOKES	DT Revolution 14/17G, alloy nipples		
		Front, mm	*278, Radial*
		Rear, mm	*288, 2x*
INNER TUBES	Presta valve, 48mm stem		

OTHER

SEATPOST	LeMond		
		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

Rolf Sestrieres- incredibly light, yet strong with PST™

Michelin Axial Pro K tires- super fast rolling

Components

Pro level- Dura-Ace, 3TTT

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
17.7 lb.
8.04 kg.

COLORS
Pitch Black/Red • White/Yellow decals • Red fork

FIT

Frame	Size	49	51	53	55	57	59	61
Rider height	Inches	66	68	70	72	73	75	77
	Cm	166	172	177	182	187	191	197
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	189.1	204.1	220.1	236.6	255.1	279.1	299.1

Zurich

OUR PRICE:
$ ________

FRAMESET

FRAME	Reynolds 853 Pro		
		Frame weight	*3.3 lb (1.50 gm)*
FORK	ICON Air Rail OD		
		Axle-crown length, mm	*370.0*
HEADSET	Cane Creek S-2 Aheadset		
		Size	*25.4/34.0/30.0*
		Stack height, mm	*26.5*

CONTROLS

HANDLEBAR	3TTT Forma SL		
		Clamp diameter, mm	*26.0*
STEM	3TTT Forgie, direct connect		
		Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra STI, Flite Deck compatible		
BRAKE LEVERS	Integrated brake/shift		
GRIPS	ICON 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*
CHAIN	Shimano HG-92		
		Chain type	*9 speed*
		Chain length (links)	*108*
CASSETTE	Shimano Ultegra 12-25, 9spd		

WHEELSET

FRONT WHEEL	Rolf Vector Comp, 18°		
		E.R.D., mm	*575*
		Rim strip	*Velox 16mm*
FRONT TIRE	Michelin Axial Pro K, folding		
		Tire size	*700 x 23c*
REAR WHEEL	Rolf Vector Comp, 20°		
		E.R.D., mm	*575*
		Rim strip	*Velox 16mm*
REAR TIRE	Michelin Axial Pro K, folding		
		Tire size	*700 x 23c*
SPOKES	DT Aero 2.0/1.3		
		Front, mm	*270, Radial*
		Rear, mm	*290/288, 2x*
INNER TUBES	Presta valve, 48mm stem		

OTHER

SEATPOST	LeMond		
		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

Rolf Vector Comp wheels- aero for speed, strong with PST™

Michelin Axial Pro K 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
19.2 lb.
8.72 kg.

Zurich T

CRANKSET	Shimano Ultegra 52/42/30		
		Bolt hole circle, mm	*130*
BB	Shimano Ultegra		
		Shell x axle, mm	*68 x 118, Splined*

OUR PRICE:
$ ________

BIKE WEIGHT
19.5 lb.
8.85 kg.

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	65
23	35	48	60
25	32	44	55

COLORS
Metalflake Blue/Yellow Pearl • Yellow/Red decals • Yellow Pearl fork
(both Zurich and Zurich T)

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	65	65	68	70	72	73	75	77
	Cm	165	166	172	177	182	186	191	197
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	90	90	100	110	110	120	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

Buenos Aires

OUR PRICE: $ ______

FRAMESET

FRAME	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 gm)*
FORK	ICON Carbon Classic	
	Axle-crown length, mm	*371*
HEADSET	VP Modus, alloy	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*36.0*

CONTROLS

HANDLEBAR	3TTT Start	
	Clamp diameter, mm	*26.4*
STEM	Alloy quick change, quill	
SHIFT LEVERS	Shimano 105 STI, Flite Deck compatible	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	ICON 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	*130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 109.5, Splined*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG70 12-25, 9spd	

WHEELSET

FRONT WHEEL	Rolf Vector, 20°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
FRONT TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
REAR WHEEL	Rolf Vector, 24°	
	E.R.D., mm	*592*
	Rim strip	*Velox 16mm*
REAR TIRE	IRC Red Storm	
	Tire size	*700 x 25c*
SPOKES	DT 14/15G butted stainless	
	Front, mm	*278, Radial*
	Rear, mm	*288/287, 2x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	LeMond	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium, CrMo rails	
BRAKES	Shimano 105	
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 Designer Select tubeset- steel feel and durability, very low weight

Wheelset

Rolf Vector wheels- light for speed, strong with PST™

Components

Race level- 105 group with 9 speed, Flite Deck ready looks and feels like Ultegra

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
19.3 lb.
8.76 kg.

Buenos Aires T

CRANKSET	Shimano 105 52/42/30	
	Bolt hole circle, mm	*130*
BB	Shimano 105	
	Shell x axle, mm	*68 x 118, Splined*

OUR PRICE: $ ______

BIKE WEIGHT
19.6 lb.
8.90 kg.

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	65
23	35	48	60
25	32	44	55

COLORS

LeMond Yellow/White • Black/Red decals • LeMond Yellow fork
(both Buenos Aires and Buenos Aires T)

FIT

Frame	Size	49	51	53	55	57	59
Rider height	Inches	65	67	69	71	73	74
	Cm	166	171	175	180	184	189
Handlebar	Width, mm	420	440	440	460	460	460
Stem	Length, mm	90	100	110	110	120	120
	Angle	-17	-17	-17	-17	-17	-17
Crank	Length, mm	170	172.5	172.5	175	175	175
Seatpost	Length, mm	250	250	250	250	250	250
Steerer	Length, mm	133.0	148.0	164.0	180.5	199.0	223.0

Tourmalet

OUR PRICE: $ ______

FRAMESET

FRAME	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 gm)*
FORK	Aero Cro-Moly	
	Axle-crown length, mm	*371*
HEADSET	VP Modus	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	ICON Sleeve Ergo	
	Clamp diameter, mm	*26.0*
STEM	Alloy quick change, quill	
SHIFT LEVERS	Shimano Tiagra STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	ICON Powercork	

DRIVETRAIN

FT DERAILLEUR	Shimano Tiagra	
	Cable routing	*Down pull*
	Attachment	*31.8 mm/ 1 1/4"*
RR DERAILLEUR	Shimano Tiagra	
CRANKSET	Shimano Tiagra 52/39	
	Bolt hole circle, mm	*130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 110, Square*
CHAIN	Shimano HG-72	
	Chain type	*9 speed*
	Chain length (links)	*108*
CASSETTE	Shimano HG50 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	14G stainless	
	Front, mm	*299, 3x*
	Rear, mm	*293/294, 3x*
INNER TUBES	Presta valve, 48mm stem	

OTHER

SEATPOST	Alloy micro-adjust	
	Outer diameter, mm	*27.2*
SADDLE	SSM New Millennium	
BRAKES	Shimano Sora	
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

Tourmalet T

CRANKSET	Shimano Tiagra 52/42/30	
	Bolt hole circle, mm	*130*
BB	Shimano BB-UN40	
	Shell x axle, mm	*68 x 113, Square*

BIKE WEIGHT
22.1 lb.
10.03 kg.

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	65
23	35	48	60
25	32	44	55

GEARING

	39	52
12	86	115
13	79	106
14	74	98
15	69	92
17	61	81
19	54	72
21	49	65
23	45	60
25	41	55

BIKE WEIGHT
21.8 lb.
9.90 kg.

COLORS

Black/Silver • Black/Red decals • Black fork
(both Tourmalet and Tourmalet T)

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	65	66	68	70	72	74	76	78
	Cm	165	168	174	179	184	188	193	198
Handlebar	Width, mm	420	420	440	440	460	460	460	460
Stem	Length, mm	80	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	131.5	131.5	146.5	162.5	179.0	197.5	221.5	241.5

Nevada City T

FRAMESET

FRAME	Reynolds 853 Designer Select	
	Frame weight	*3.7 lb (1.68 gm)*
FORK	Aero Cro-Moly	
	Axle-crown length, mm	*371*
HEADSET	VP Modus	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*34.5*

CONTROLS

HANDLEBAR	ICON Sleeve Ergo	
	Clamp diameter, mm	*26.0*
STEM	Alloy quick change, quill	
SHIFT LEVERS	Shimano Sora STI Dual Control	
BRAKE LEVERS	Integrated brake/shift	
GRIPS	ICON 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	*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	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 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)	

OUR PRICE:

$ ________

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	65
23	35	48	60
26	31	43	53

BIKE WEIGHT

23.0 lb.
10.44 kg.

COLORS

Blue/White • Blue/Red decals • Blue fork

FIT

Frame	Size	47	49	51	53	55	57	59	61
Rider height	Inches	65	66	68	70	72	74	76	78
	Cm	165	168	174	179	184	188	193	198
Handlebar	Width, mm	420	420	440	440	440	460	460	460
Stem	Length, mm	80	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	131.5	131.5	146.5	162.5	179.0	197.5	221.5	241.5

LeMond CycloCross

New for 2001

We first built a Reynolds 853 LeMond in 1996. The Poprad uses this same great material, but in a competition cyclocross design.

Geometry

The Poprad combines dirt-worthy handling with the advanced ergonomics of Greg's geometry (see pages 9-10) 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 (see Comparing Materials on pages 2-3 and Reynold's 853, page 7). 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

FRAME	Reynolds 853 Designer Select Cross	
	Frame weight	*3.7 lb (1.70 gm)*
FORK	StraightBlade Cross	
	Axle-crown length, mm	*405*
HEADSET	STS Aheadset	
	Size	*22.2/30.2/26.4*
	Stack height, mm	*24.5*

CONTROLS

HANDLEBAR	Bontrager Race	
	Clamp diameter, mm	*26.0*
STEM	Bontrager Comp HAS	
	Steerer clamp height, mm	*41.0*
SHIFT LEVERS	Shimano Ultegra bar ends	
BRAKE LEVERS	Dia-Compe 287 Aero	
GRIPS	ICON 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)	*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	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, cantilever	
PEDALS	Shimano SPD M515, clipless	
	Axle diameter	*9/16"*
SEAT BINDER	Alloy w/integral bolt, cable hanger	
	Inner diameter, mm	*31.9*
ADDITIONALS	2 bottle mounts	

OUR PRICE:
$ ________

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 chain-ring

Shorty 4 brakes- powerful stopping, low clear-ance

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
Pearl White/JD Green • White/Black decals • Pearl White fork

FIT

Frame	Size	49	52	55	57	59
Rider height	Inches	67	70	71	74	75
	Cm	169	177	181	187	191
Handlebar	Width, mm	420	460	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	250	250	250	250	250
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.

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.