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Carbon fiber structures have huge variability

Not all carbon bikes are built the same. Some of the variations could occur in manufacturing. Remember that variations occur in design. The fiber orientation within a part effects both its strength and stiffness. The part’s shape and thickness will effect its ride as well. Different manufacturers use a wide variety of shapes, diameters, and wall thicknesses which change the stiffness, weight, and strength of the frame. With our OCLV process, we’ve refined the ride of our bikes, and created a highly repeatable process so every OCLV rider can have a bike just like the one that carried Lance in yellow to the finish line on the Champs d’Elysee at the end of the Tour de France.

OCLV 150 (or just OCLV)
Pre-2001 Trek 5500, 5200, 5000 models
Winner, 1999 Tour de France
Frame and fork- 1658 grams

With this material, a square meter of flat tow weighs 150 grams. OCLV 150 was first used in the 5500 road bike back in 1992. Since that time, we have produced a lot of bikes using this technology. The 9900 OCLV hardtail came out in 1993. The OCLV Y full suspension bike came out in ’94. The Y Foil road bike was first produced for the 1997 model year.

Over the years we continued to learn about making carbon bikes. As we learned, we made subtle changes to the frames. As an example, we changed the 5500 bottom bracket shape to make it easier to build accurately. We changed the way we built the head lug, supporting the headset with two separate (and lighter) metal inserts instead of a long tube. We re-engineered the bottom bracket insert moving the bonding stress from peel to shear mode, greatly increasing its strength. We changed the fiber orientation of the carbon to modify the ratio of strength and comfort in the saddle. All these improvements were designed to improve the ride and durability. As we made these changes, we also reduced the frame weight.

OCLV 120
2001 and 2002 Trek 5500, 5200
Winner, 2000 and 2001 Tour de France
Frame and fork- 1539 grams

A magazine editor once did the math to find substituting titanium for steel in a bike costs about $33 per gram. Using this formula, an OCLV 120 frame is worth $3300 more than an OCLV 150 frame.

OCLV 120 is a lower areal weight, where a square meter of tow weighs only 120 grams. An OCLV 120 frame uses the same grade of carbon as an OCLV 150, just less of it.

Our engineers pulled a few tricks on the 120. You could reasonable expect a frame with less material to be somewhat less stiff and strong. Amongst the tricks we can discuss, we changed the shape and outer dimensions of the lugs. From our tests the strength and stiffness are roughly equivalent between an OCLV 120 and 150 frame.

OCLV 110
Trek 5900, 5700
Superlight bike ridden to Huatacam, 2000 Tour de France
Frame and fork- 1353 grams

This is the material we use in the Superlight frame ridden by Lance Armstrong in the mountains. A square meter of OCLV 110 tow weighs just 110 grams.

Since there is even less carbon in this frame than in the 120, we use a higher strength, higher modulus carbon. The resulting frame has the same strength and stiffness as an OCLV 150 frame, but is about 1/2 pound (200gm) lighter. The drawback to high modulus carbon is greatly increased material costs. In plain English, this frame is very expensive.

OCLV HC

OCLV HC sandwiches a layer of Nomex honeycomb between two layers of OCLV carbon (Fig. 22, note the bend in the section without the HC layer). Sandwich construction provides a large increase in wall rigidity, similar to using a very thick section of carbon. However, the honeycomb layer is essentially hollow. The result is a very rigid structure with low weight.

Since rigidity prevents the fibers from moving out of alignment in the laminate, OCLV HC also provides a high level of strength per weight.

To understand why we only use OCLV HC in flat areas, here’s an illustration. In a flat sheet, 1mm thick aluminum is very flexible. Rolled into a tube, a 1mm aluminum wall can’t be squeezed at all.

OCLV HC is only useful in areas that are fairly flat. It would be very difficult to place it in areas with a tight radius, but the illustration above shows that in a small diameter tube it would provide little to no benefit anyway.
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. Aluminum’s low density and high formability 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.

**ALPHA NOMENCLATURE EXPLAINED**

Alpha

Proprietary Trek aluminum tubing, using 7005 or 6061 T6 aluminum. These frames use special tubing diameters, wall thicknesses, designed by our engineering staff. Alpha frames are built by outside vendors to Trek specifications. They go through the full Trek engineering process starting with design and including a full testing protocol. Some Alpha frames are built in Wisconsin, some are imported then painted and assembled in Wisconsin. Alpha tubesets are on the 4000 series ATBs, 1000 series road bikes, Navigators, and some hybrids.

Alpha ZX

Like the Alpha frames, Alpha ZX is Trek designed aluminum tubing. However, Alpha ZX frames are built with 6061 T6 aluminum. Trek’s proprietary heat treating process enhances the Alpha ZX tensile strength, yield strength, and elongation making for a superior frame.

Alpha ZX frames are all built and painted in Wisconsin. They are slightly lighter than the standard Alpha frames, and with the same durability, making them ideal for riders concerned with faster times. Alpha ZX tubesets are on 4000 series ATBs, and some hybrids.

Alpha SL

Alpha SL and SLR frames are also Trek designed tubes of 6061 T6. They are built and painted in Wisconsin. In addition, SL frames use butted tubing to reduce weight and enhance the ride. Trek’s proprietary heat treating process enhances the Alpha SL tensile strength, yield strength, and elongation making for a superior frame.

Alpha SL and SLR tubesets are on 6000 series ATBs, 2000 series road bikes, XO-1, and Hilos.
ZR9000

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

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

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

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

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

A MATERIAL DESIGNED FOR BICYCLE FRAMES. by Gary Klein

Advertising Claims

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

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

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

Why Aluminum?

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

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

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

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

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

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

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

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

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

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

Aluminum

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

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

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

Welding aluminum

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

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

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

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

Heat treatment of aluminum

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

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

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

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

Grain growth

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

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

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

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

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

Developing a recipe for a better aluminum alloy

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

Around 1990, I started looking at some Lithium Aluminum alloys. These are different than typical aluminum alloys in that they have significantly lower density, and increased modulus (that means higher stiffness). They are not perfect, and have some unique problems to overcome. The aircraft industry spent millions on their development, but these alloys have not seen a lot of use to date.

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

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

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

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

May I have a bit of alloy, please?

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

Great results

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

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

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

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

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

Even though I have been working on aluminum bike frames for 28 years, the pace and amount of innovation has kept it really fun. I’m sure you will enjoy using our new products based on this material innovation
Developed for the Trek Professional mountain bike team, the basic concept of Pro Geometry is a bike that better handles the higher speeds of Pro racers. There are several key features used in Pro geometry to accomplish these goals.

Position

The rider compartment is slightly more upright. A road rider needs to be bent into an aerodynamic position because wind resistance is a major source of fatigue on the road. A road racer's average speed is in the 20mph range and higher. Mountain bikes usually only go this fast downhill, so you don’t need to be bent over as much. Another argument for an upright position is balance. In humans, the body’s balance mechanisms are mostly in the head. Your sense of body position is anchored by your shoulders. Your hands can move faster than your arms instead of a sweeping sideways movement of your shoulders, so technical steering is precise at high speed. Your sense of balance is critical to handling technical terrain or carving a fast turn on singletrack.

Long front/center

Pro Geometry uses a long front/center. Front/center is the distance from the bottom bracket to the axle of the front wheel. The location of the front wheel is important, since it's the first part of the bike to meet obstacles in the trail. The front axle is also the pivot point of the bike when a rider takes a flyer over the handlebars.

With a longer front/center, the front wheel is pushed further ahead of you. When you find yourself moving back on your bike, it’s usually 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.

When the Trek engineers moved the front axle forward, it added resistance to over-the-bars flight. With this added stability, you’re more relaxed at speed, and since you’re more in the saddle than behind it, you’re in a better position to keep the power on the pedals.

Steering

With a long front/center, a bike needs a longer top tube. To correctly place your hands when riding a bike with a long top tube, you must use a shorter stem. The shorter stem used with Pro Geometry puts your hands closer to the steering axis so 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.

Pro geometry is designed around today’s longer forks. Thanks to the long front/center, Pro geometry places slightly less weight on the front wheel. Due to a combination of steering angle, trail, weight distribution, and a slightly longer wheelbase, a bike with Pro geometry likes to be steered by angulation, an advanced skill that allows a rider to stay balanced over the bike’s tire contact patches through a turn.

The technique is much like a downhill skier’s position, where the torso remains upright while the lower body is angled for steering. This position keeps the center of gravity over the skis for maximum edge hold. And if the skis should slip, the skier can extend to control them. As a high speed cycling maneuver, this angled position makes controlling the bike in a corner much easier. If the tires slide, extending your body keeps your center of mass on top of the tire contact patches.

Handling

Instead of making a bike that steers quickly so you can adjust your line in a turn, this bike has additional directional stability that lets you pick a line early and hold it. It has a touch of understeer, so if you go into a corner a little too hot, just lean it in a bit more with a touch of rear brake, and go. Instead of skittering around and washing the front tire, the additional lean puts more edge knobs onto the ground, and a Pro Geometry bike really carves. Coupled with a light-weight frame, Pro Geometry makes a bike quick from edge to edge, so it handles tight turns really well. And the longer wheelbase works like a giant slalom ski so high speed fire road riding is way fun.

Doesn’t the short stem make the bike climb poorly?

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 a Pro Geometry bike actually climbs 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 Pro Geometry, it's even easier to hold your line on steep, slow speed climbs. Secondly, when climbing hard in first gear any bike will respond to the pressure of pedaling. Imagine if the headset were placed in the middle of the bike, right below the saddle. The bike would hinge in the middle, between contact patches of the tires. With every pedal stroke the rear wheel would turn away from the pedaling force. As a result, the front wheel would turn toward the pedal side, and the bike would swing 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 used in Pro geometry, you stay over the bike, and the bike tracks straighter, making it climb very well indeed.

Fitting Pro Geometry frames

Pro Geometry bikes (OCLV hardtails, Alpha SLR, ZR9000, Fuel, and STP) are designed to put you in a similar position to our other performance mountain bikes. The only difference in position is that the larger sizes of Pro Geometry use taller head tubes than we offered in the past. With taller head tubes and 25mm of spacers it may be necessary to move some spacers to the top of the stem if you prefer a more deeply bent-over fit.
Although the Fuel is a relatively new frame platform, it has already proven itself to be a top level performer. In 2001, the Trek Fuel set the pace with Trek's Roland Green on board. Clearly, the Roland and the new Fuel are a fast combination. The Fuel is also an excellent handling machine. And it doesn't waste your energy. Everything a perfect full suspension bike should be. So even on a casual afternoon spin, the Fuel makes riding more fun.

**Suspension design**

The Fuel uses a rocker linkage to activate the rear shock. This rocker adds lateral rigidity to the frame, so the Fuel steers and handles like a hardtail. Likewise, the relatively short travel (by Trek 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 Fuel 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 Fuel the ultimate all-round suspension bike.

The new Fuel uses ZR9000 frame technology. You'll notice the large diameter tubing, especially the down tube. Although it's more expensive, you'll see we even manipulated it into a bi-axial shape for the additional frame strength. Those large diameter aluminum tubes make the Fuel very stiff laterally, so it handles like it's following a set of rails. The frame stiffness also works to put power to the ground efficiently. Less flex means your pedaling energy translates directly into forward motion. And of course, with Alpha technology the frame is very light for a full suspension bike.

While the frame design and tubing selection work to add steering control and maximize pedaling power, the suspension design is also helping out in a big way. The tires follow the terrain for maximum traction, pedal interrupting bumps virtually disappear, and big hits are swallowed up without bottoming. The key to doing all this while staying invisible to the rider is tuning of the overall suspension. Designed for the progressive action and low weight of an air shock, the Fuel 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 all the while being almost undetectable.

**And don't forget the details!**

It should be obvious our engineers worked really hard on this one. In addition to hard work, they had the advantage of borrowing from a lot of technology we've developed in full suspension bikes over the last 9 years. Trek has made a lot of bikes, period, and from this palette of experience we made sure the Fuel has all the little details a great all-round bike needs. Even though it's full suspension, the Fuel has three usable water bottle mounts so long rides don't leave you shriveled like a prune. It has a replaceable derailleur hanger, to help you get home from the back country. Of course, the Fuel also has top routed cables to keep the controls free from muck-induced friction.

**Fuel suspension setup**

As a starting point for adjusting the suspension on a Fuel, we recommend setting the forks for about 15% sag (12mm), and the rear shock at about 25% sag (9mm). This will provide a good, all-round ride. If your riding is slower or more technical, you may want a softer setup. If you ride really fast, or on smoother terrain, you may like the Fuel set up a bit firmer. Find out what the correct pressures for the starting sag are, and then try changing by increments of 5 to 10 psi.

To make it easier to set a Fuel up for a test ride, a shop can use body weight. However, be aware that the distribution of your body weight, both on your body and on the bike, may not balance out at the previous sag recommendations. As an example, if you like your saddle pushed way back, you will apply more force to the rear shock, increasing the sag. That said, try using a setting in the rear shock of 2/3 your body weight in pounds. If the shock has damping adjustment, set it at 2 clicks in from full fast.

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Trek 2002 Tech Manual
Professional Downhill Racing

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

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

Downhill Thrills

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

The new Trek Diesel

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

- 8 inches of rear wheel travel, and designed for a 6-8" travel triple-clamp fork
- Extremely beefy construction- tubes, links, pivots, all are designed for the forces generated by our Pros
- Swappable, bolt-on rear dropouts. The bolt-on pattern allows you to change the length of the chainstays (and the bottom bracket elevation), or switch from standard quick-release wheels to a through-axle. This makes the ride tunable, and the frame is compatible with all popular downhill wheel types
- Patented chain tensioner- by allowing you to move the tensioner you get precise and powerful chain containment with any chainring size you choose to use (downhill bikes like to throw their chains off at inappropriate times). Even cooler, the location of the tensioner prevents inchworming of the suspension when pedaling.

The frame comes in two sizes, 14.5 and 16".
Colors: Black • Red/White decals (not supplied with a fork)

Rear shock
Eye to eye 8.75"
Eye width 7/8"
Eye I.D. 8mm
Stroke 2.75"
Are you a rider who would love full suspension, but you’ve decided to wait until the bikes get lighter? Wait no more! At a mere 4.10 pounds (1860 grams), including the frame and shock mounting hardware, the Trek STP frame is lighter than many hardtail race frames.

The acronym STP stands for Soft Tail Pro. A Soft Tail is a suspension bike without pivots, where the frame flex provides rear wheel travel over bumps. Pro geometry is the successful design Trek uses on high end race bikes. This design provides increased handling performance at higher speeds. Put them together with another Trek acronym, OCLV (see pages 4-8), and you have one fantastic full suspension racing mountain bike.

**STP suspension features**

The STP offers 35mm of rear wheel travel, or about 1 1/2". This travel is controlled by a RockShox SID rear shock. The shock is placed with a very low leverage ratio, so it does not take much pressure in the shock to provide adequate preload. This low leverage ratio also allows the shock’s damping to do an excellent job, so the suspension action is not readily noticeable. Basically, the bike feels like a hardtail in steering, pedaling, and uphill performance. The difference comparing the STP to a high-end racing hardtail is that the STP offers more comfort and extra rear wheel traction. Not a bad combination of features.

**Why not just put a suspension seatpost in a hardtail?**

It’s true that a suspension seatpost offers some comfort. However, few suspension seatposts provide a lot of travel. And none of them help you when you stand.

There are those suspension seatposts that provide a lot of travel. This can add lots of comfort, like any suspension. However, most suspension seatposts use pretty basic suspension, without much opportunity for tuning beyond simple preload. Another issue is that the same movement that provides comfort also allows too much motion between the seat and the bottom bracket. Moving the seat up and down by an inch or two detracts from your pedaling power. In some cases, the motion of the saddle can aggravate your lower back, since with a suspension seatpost the angle changes between the back and thighs during the suspension stroke.

Last, allowing the seat height to change during cornering or other maneuvers reduces rider control. Some seatpost advocates argue that on tough sections a rider stands up anyway, but when standing the seatpost is no longer providing suspension.

With the STP, the suspension works full time, seated or standing. There is a generous amount of suspension, yet the distance from seat to bottom bracket (as well as the seat to bars) is fixed for pedaling efficiency. And with a RockShox SID rear shock, the suspension is highly tunable.

**Compared to pivoting suspension systems**

There can be several objections to full suspension. Most prevalent of these are loss of frame rigidity, added weight, increased frame noise and/or maintenance, and reduced pedaling efficiency. In each of these categories, the STP compares favorably to a hardtail. Most of these issues are generated by pivots, in either designing the frame for the pivots, or the result of pivot wear.

**No Noise** - Noise, or maintenance to avoid or eliminate noise, is eliminated since there are no pivots to squeak on an STP.

**No Flex** - As pivots wear, they can allow unwanted frame flex. As the frame flexes laterally and torsionally, the rear wheel can come out alignment with the front of the bike, and this makes the bike steer poorly. Again, the STP has no pivots to allow flex, so steering is just like a similarly designed hardtail. All the time.

**No added weight** - Although the STP has the weight of a rear shock, the use of an OCLV carbon composite frame balances out the shock weight. Even with the shock in it, the frame weighs barely over 5 pounds. While this isn’t the lightest frame on the market, it’s within a full water bottle of that weight.

**No pedal bob** - Since the seatpost and the bottom bracket are rigidly fixed, there is no change in seat height, and no loss of pedaling efficiency. Since the bottom bracket can move relative to the rear wheel, it can be argued that energy will be lost due to excitation of the shock. That is, as you move your mass up and down when pedaling, the shock will be compressed slightly. This does take away some pedaling energy. But this energy loss is certainly no greater than without suspension, when you have to deal with bumps coming directly from the rear wheel to the saddle.

**Frame details**

The STP has 2 water bottle mounts, just like a hardtail. It has a replaceable derailleur hanger. Of course, the STP also has top routed cables to keep the controls free from muck-induced friction.

**STP suspension setup**

As a starting point for adjusting the suspension on an STP, we recommend setting the forks for about 15% sag (12mm), and the rear shock at about 25% sag (6mm). This will provide a good race feel.

To make it easier to set an STP up for a test ride, a shop can use body weight. Try using a setting in the rear shock of 1/3 your body weight in pounds in the main spring, and 1/2 of that in the negative spring. Adjust the damping in 2 to 3 clicks from minimum.

| Body /Preload | Weight | Main | Neg | | Body /Preload | Weight | Main | Neg |
|---------------|--------|------|-----| | | | | |
| 100 33 16.5 | 45 2.3 | LBS PSI | 1.1 | | 100 33 16.5 | 45 2.3 | KG ATM |
| 110 36 18 | 50 2.5 | 1.3 | 120 40 20 | 55 2.7 | 1.4 |
| 130 43 22 | 60 3.0 | 1.5 | 140 46 23 | 65 3.3 | 1.7 | 150 50 25 | 70 3.5 | 1.8 |
| 160 53 26.5 | 75 3.7 | 1.9 | 170 56 28 | 80 4.0 | 2.0 | 180 60 30 | 85 4.2 | 2.1 | 190 63 31 | 90 4.5 | 2.3 |
| 200 66 33 | 95 4.8 | 2.4 | 210 69 35 | 100 5.0 | 2.5 | 220 73 36 | 105 5.2 | 2.6 | 230 76 38 | 110 5.5 | 2.7 | 240 79 40 | 115 5.8 | 2.8 |
No excuses.

Where else can you buy the exact same frameset as the one that won the 2001 Tour de France? Yes, Lance rode a stock 2001 model year 5900 frameset on almost every stage. On other road stages, he rode a Trek OCLV TT frame.

Our beautiful OCLV bikes ride extremely well in a wide variety of conditions. In the Tour the riders must conquer incredibly steep, long climbs. They have to ride long miles, day in and day out. And the wild bunch sprints are beyond compare.

In every stage, Trek’s OCLV framesets performed flawlessly for the Postal team. On climbs, descents, and even the sprints, Trek bikes were at the front of the peloton. You can proudly ride the same frames as the Postal team. The only problem with owning one of these beauties is if your buddy nips you in the next county line sprint, you can no longer blame the equipment.

Do Trek’s OCLV frames provide an unfair advantage?

The Trek OCLV frames are quick and agile, making them ideal for riding in the tight professional peloton. While stable enough for long Tour stages, they still respond very quickly to rider input. These frames are sensitive to weight shifts, so a racer can respond intuitively to situations as they happen. This sensitivity also lets the bike work with you in hard sprints and climbing efforts, helping you develop power as they rock the bike back and forth.

Knowing what your wheels are doing is really important to the pros. When they’ve got a knee out, leaning into the apex of a turn in the Alps at 50MPH, they need to feel their tires hooking up. Although our OCLV carbon frame damps vibration, there is still excellent road feel.

The comfort offered by an OCLV frame also leaves our Pros less fatigued after a 250km stage. In 2001, USPS rider George Hincapie rode a Trek 5500 to a podium spot at the spring classic Paris-roubaix, a course notorious for its abusive cobble sections. Of course, if George was a bit fresher in the sprint, maybe he wasn’t working as hard on the climbs. After all, the Trek OCLV is the lightest frameset in the peloton.

TT frame

An old maxim states that Aero means heavy. The Trek OCLV Time Trial frame disproves the old maxim.

These frames were designed specifically for Lance and the Postal team in a wind tunnel. But we built a few extras, because we knew you’d want one.

The frame is built in just three sizes; S, M, and L. The seat height is adjustable by using a shim stack, measured from the saddle rails to the center of the bottom bracket. Top tube length is measure here from the top of the seat mast to the top of the head tube. We expect that you will use your favorite aero bar and stem combination to fine tune the fit.

The frame uses a 1” headset, and 700c wheels.

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In the late 1980's, mountain bikes began taking over the sales floor. These bikes were ridden in much harsher terrain, often off road. Compared to pavement, riding over rocks, logs, and in rough terrain puts 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 benefit from this change too. 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 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 similarly sized 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 strength and stiffness a smaller volume of steel (see Comparing Materials, pages 2-3). In the 1" format, lighter steerer materials required so much material to maintain strength, there was little weight loss to be gained in a safe fork.

Stiffness is also an issue. Stiffness affects 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 strength, fatigue resistance, and stiffness needed.
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 words, 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 you 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.
WSD (Women’s Specific Design)

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.

Small women ride 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 WSD bikes are spec’d with women’s specific components, like saddles, bars, and crank lengths. The WSD mountain bikes have women’s specific suspension forks with softer springs.

More importantly, these frames are a completely different geometry than the men’s bikes. So while most ‘women’s’ bikes make due by just tweaking a men 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

Trek engineers addressed these issues in several ways in the WSD 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 Trek 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 for her the bike may be 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 woman’s bike, she will get similar handling with a similar ‘feel’ to that designed into a man’s bike for a man.

Women’s road bike geometry

Most women have only been able to choose from a single category of bike design; men’s. On taller women, this choice was often satisfactory. Perhaps a few easy changes were necessary, such as a shorter stem and adjusting a different, ladies saddle further forward. Smaller women found it much harder to get a good fit and even if the fit was accomplished, performance on the small bike often suffered.

Some companies tried to address this by using shorter top tubes coupled to shorter seat tubes. This may have helped some, but the usual compromise on these attempts was to raise the bottom bracket considerably. Why the high bottom bracket? As the top tube is shortened, the toe clearance around the front wheel is compromised. Raising the bottom bracket alleviates this somewhat. This doesn’t help with an already restricted standover. Raising your center of gravity doesn’t help the bike’s handling, instead making it tippy and precarious in corners. An additional problem is that raising the bottom bracket without adjusting the handlebar position upward puts the bars lower, when the bars
really need to be higher for a woman.

Another solution has been to use a smaller front wheel. This allows a shorter front center, but having two tire sizes, two tube size, two rim sizes, etc. causes some maintenance headaches for riders.

Our engineers evaluated all this and decided that to get the best overall fit, AND PERFORMANCE, smaller wheels front and rear coupled to an entirely new geometry was the best way to solve the small rider fit. An important point here is that although the frame engineers were working on women's solutions, many smaller males may find that these bikes ride better than past compromises they've made to get a good fit.

Smaller wheels

Most sizes of WSD road bikes use a 650c diameter wheelset. To properly position the handlebars and avoid excessive toe-clip overlap, they have to use smaller wheels. On the plus side, smaller wheels are easier to accelerate. They present less frontal area, making them more aerodynamic. No wonder we also use the smaller wheel size on our built-for-speed Hilo tri bikes.

Using smaller wheels has many effects on the bike design. Instead of being forced into particular angles to accommodate an ill-fitting wheelset, 650c wheels allowed our engineers the freedom to pick the exact angles that would yield the best ride. It also allows more 'normal' tubing lengths so the bike has the normal flex and liveliness 'big' people expect from their bikes. Better fit. Better feel. Better function.

For better fit, we started by offering a shorter top tube. Previous attempts used a radically slack head angle and steep seat angle to shorten the top tube. While Trek women's geometry is different than men's in this respect, our shorter top tube is not at the sacrifice of handling. The head angles are slightly more relaxed, but this is to add steering stability, not toe clip clearance. Toe clip clearance is adequate on even the smallest frame size, assuming that the small rider also has small feet. But women riders do not have as much weight in their shoulders as a man of similar height. That weight works with trail to provide steering stability and tracking on a bicycle. The WSD head angles are tuned just to provide good handling.

Another special detail we've added is to address the lower centripetal force generated by the smaller diameter wheel. The wheel's rotation provides a stabilizing force much like a gyroscope. The lighter the wheel, or the closer to the hub the mass is located, the lower this force is. Since this force provides stability coupled with trail, we use a shorter fork rake (offset) to add trail. The result is a bike that handles neutrally, even with the lighter, smaller wheel. Yet those smaller wheels really accelerate, so a smaller person who might not have the horsepower of a bigger rider can really move. Fun. And fast!
Keys to fitting a woman on a bicycle

Accommodating the gender difference

For those who want the short version of what we did to make the WSD bikes work for women, it's fairly basic. We have designed and spec'd the WSD bikes to provide narrower hand position, with grips and controls adapted for smaller hands where possible. We have placed the handlebars horizontally closer to the bottom bracket, but higher. We use crank lengths appropriate for a smaller person.

The changes may sound fairly basic, but we went beyond what most have done. We wanted to make these bikes ride as well for a woman as a man's rides for a man. These frames are not just the connect-the-dots approach of adapting a man's frame with women's parts. We went the extra mile and changed the geometry to increase overall riding performance.

We tuned the geometry for better steering, weight balance, and shock absorption. Achieving the right weight balance is highly individual, but there are several common themes. First, you use your weight to push on the pedals. Second, your weight helps hold you stationary on the saddle. Third, your weight balance over the wheels is part of the complicated steering of a bicycle. These different needs don't always agree on where your weight should be placed; it's a compromise.

Have you ever noticed that when sprinting, you tend to move forward in the saddle? Ever notice that your bike is less stable when you sit upright 'no hands'? Ever try climbing really hard without touching the handlebars? To some extent, these examples illustrate how weight distribution effects bike riding.

Anatomical differences between males and females

There are quite a few differences between men and women that effect fit on a bicycle. All have some effect. Some are more important than others. Here we make comparisons between a man and woman of the same overall height.

**Body height** - the distance from the floor to the top of the torso (sternal notch). This distance is more relevant to bike fit than overall height because the neck and head are not accommodated by the contact points on a bike (the legs, arms, and torso are). A woman's 'body height' is greater than a man's. Simply put, women have shorter neck/heads than men. This means a woman of a given height will need a slightly bigger bike than a man.

**Body weight** - the weight of the rider. Women tend to be lighter than men. More importantly, the center of mass is lower on a woman. A man's center of gravity is closer to his shoulders, while a woman's is normally closer to her hips. Since the torso is angled toward horizontal on a bike, that means a woman's center of gravity on a bike may be placed more rearward. To preserve good weight distribution for handling and pedaling power to the pedals, a woman needs to sit slightly further forward on a bike.

**Shoulder width** - the distance between the outside of the shoulder blades (acromion of the scapulae). Although there is little correlation between height and shoulder width, there is a strong tendency for a woman of a given height to have narrower shoulders than a man. The difference is often 10 to 40mm. To apply mechanical advantage and achieve good ergonomics, a woman needs narrower handlebars.

**Leg to torso ratio, arm to torso ratio** Comparisons between leg and torso lengths by gender, or between arm and torso, are often made in attempts to explain gender differences in bicycle fit. While there are some tendencies, both of these comparisons exhibit scattered data. In other words, between individuals there is lots of variation, but grouped by gender, there aren't any strong conclusions to be made.

**Foot size** - the shoe size of the foot. Women tend to have smaller feet. Another important consideration is that women more often exhibit over-pronation, which effects pedaling biomechanics. While pronation is seen as an inward rolling of the foot as weight is applied, the source of this rolling is over-rotation of the tibia. As a result of the misalignment of the foot and ankle in over-pronation, women more often need orthotics. It's also important that a woman's pedals allow rotation (fortunately most modern pedals provide this).

**Hand size** - the width of the hand across the knuckles, and the length of the fingers. Women generally have smaller hands then men. It's also true that women generally have less hand strength. To fit a woman's smaller hands, grips should be smaller in diameter, and less width is needed. To accommodate shorter fingers, controls should be closer to the grips. However, the mechanical advantage of levers on a woman's bike should be at least as great, if not greater.

We do the best we can to fit our bikes to women's hands, but consumers demand certain components. Many popular items are simply not available to properly fit a woman (yet).

**Pelvic width** - the distance between the sit bones (ischial tuberosities). A woman's pelvis is wider than a man's. A woman's saddle needs to be wider than a man's. The arrangement of a woman's pelvis makes it difficult for her to roll her pelvis forward on the saddle. Pelvic tilt effects the angle of the lower back, so flattening the upper back can put a sharp bend where the two meet. This can cause pain, so a woman's handlebars need to be raised slightly in an effort should be made to avoid sharp angles to the back.

The ischial tuberosities aren't a single spot on the pelvis, but curved sections of bone. They start wide at the back and curve inward to join over-rotate in the front of the pelvis, sort of like two side of a triangle. As the pelvis rotates forward, the part of the sit bones meeting the saddle becomes narrower. The contact spots also move rearward. As you sit more upright, the sit bones are spaced further apart, but move forward on the saddle. There are other important pelvic differences between a man and a woman. A woman's acetabulum (hip sockets) are further forward than a man's. In some cases, this can make it look like a woman is overhanging the back of the saddle. But it's really that her spine and tailbone (coccyx ) is further behind her sit bones. It's an important difference for ergonomics, since compared to the biomechanics of a man, this puts about 15% more stress on a woman's lower back when lifting. Pulling up on the handlebars requires the same lever system as lifting, so it effects standing out of the saddle on a bike.

Positioning women

**Handlebar position**

Most current fitting systems are the result of studying positioning biomechanics of elite male road racers. Rules like "get a flat back" are difficult for recreational males, and with females it's even harder. Likewise, similarly derived rules like "Knee Over Pedal Spindle" or "the bars should cover the front axle" don't address the biomechanics and ergonomics of females. As we've discussed, the female body is different than the male body.
To accommodate a woman’s pelvic shape, a woman needs to sit more upright on the bike. The handlebars must be raised to accommodate this. As she sits more upright her shoulders move rearward, so the reach must be decreased. As an added benefit, this higher, more rearward bar position moves the handlebars closer to her hips when she stands. Moving the handlebars closer to her hips decreases the leverage applied to her lower spine, so she can efficiently ‘honk’ on the bars if desired.

**Saddle position**

Moving the handlebars may decrease any sharp angles in her lower back. However, it may not provide enough relief. In such a case, the saddle should be moved forward to ease any discomfort. Moving the saddle forward has two effects. It will allow her to eliminate sharp bends in her back, and it will keep her center of mass better distributed over the wheels. Better weight balance increases handling and her ability to apply power to the pedals.
Bontrager Wheelsystems

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

**Engineered wheels**

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

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

**The key to durable wheels**

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

**Design review**

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

**The missing factor**

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

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

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

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

**Bontrager Wheelsystems stay true longer**

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

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

**The keys to a perfect road wheel**

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

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

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

**Mountain bike wheels have different needs**

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

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

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

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

**Truing Bontrager Wheelsystems wheels**

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

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

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

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

**Vertical deviations**

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

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

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

**A note about the "little marks" on the rims**

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

**Technical Specifications**


Tubeless Compatible Technology

Snakebite

One of the more common mechanical problems encountered by a rider on a mountain bike ride is the pinch flat. With their tire pressure set on the soft side to enhance traction, the rider runs 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, its very expensive. The key to UST is a rim without spoke holes through its outer 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 the rider has to buy an entire wheel. Third, a UST rim will not work with a standard tire. And lastly, there is a 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; a real plus for the rider. Second, our rim design is compatible with standard mountain bike tires, given that the rider 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 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 its impervious to air. Installed correctly in the special mated rim, it seals tightly 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 its 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 (1/4 ATM) per day.

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

What if I run over a nail with tubeless tires?

A tubeless tire functions like a tire with a tube in it. Its 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, its will probably flat 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 out on the trail its 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 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, its 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.
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 address 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’re 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, with little change in performance due to setup. 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. As an example, a rim brake can dive under the rim if not maintained properly. Worse yet, as the pads wear they can slide above the rim and wear a hole in the tire sidewall. Disc brakes cannot dive or wear 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 trimer. 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, like those we spec on our bikes. Radically 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. We have included this information in the bicycle Owner’s Manual, but repeat it here.

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, so while the wheel is spinning the rotor can easily cut a misplaced finger.

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 (place something between the pistons to prevent them from hyper-extending if the lever is applied).

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 burnished, or bedded 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-truth 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.

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.

Disc brake squeal and other issues

Disc brakes on a bike, like those on a car, can make noise. Noise, in its rawest sense, is the vibration of air molecules. The air molecules are usually excited by something else vibrating, and in the case of brake squeal the start of the vibration is one of the brake parts. But which one?

The first thing to check with squealing disc brakes are the by-roads of bolts. Check that all the bolts are properly tightened; rotor attachment bolts, brake attachment bolts, and bolts holding an adapter to the frame.

Another source of vibration is between the brake pads and the rotor. This can be caused by debris, chemical contamination, or simply misalignment. Debris can mean anything picked up from the trail. Dust can make discs squeal, and so does water.

Chemical contamination can come from chain lube, brake fluid, or any number of other sources. In the case of chemicals, they may impregnate the disc brake pad material or the surface of the rotor. This can be very hard, or impossible, to remove. If the contamination cannot be removed, the only solution may be to replace the parts. For this reason, its very important that you remove the rotor (remove the wheel) and pads prior to bleeding the brakes so brake fluid does not contaminate them (place something between the pistons to prevent them from hyper-extending if the lever is applied).

Misalignment can come from several sources. First, check that the dropouts of the frame are parallel. Then, with the wheel inserted in the frame and the quick release properly closed, check the brake adjustment. If the pads do not meet the rotor evenly, some vibration may occur prior to both pads making contact. If the pads do not meet the rotor squarely, in all three planes, some vibration may occur. Disc brakes do not allow 3-plane adjustment, but do the best you can. Ultimately, it may require that the pads wear-in slightly before their surface is truly in alignment with the rotor.

A less obvious source of vibration is air bubbles in the brake fluid. Brake fluid is essentially not compressible, but air is, If the brake pad vibrates while air is in the system, the air will more easily allow the pad to vibrate, enhancing any resulting noise. Even a tiny amount of air can be a problem, so don’t rely on lever feel to tell you if there are air bubbles in the oil.

Its possible for the brake to vibrate, even with everything properly adjusted. Its a matter of the coefficient of friction of the pad against the rotor occurring at just the right frequency. In our experience, this only happens with certain brakes and certain pads. We have designed a 'brake booster' for disc brakes which quiet's this.

Note: We recommend that disc brakes only be serviced by your dealer.
New for 2002

From the outside, the Fuel looks the same for 2002. However, a major change happened under the paint; we used our new ZR9000 alloy to make all the Fuel frames 15% lighter and 15% stronger.

We also changed the emphasis of use, dividing the Fuel line into two types of bikes. The Fuel 100 and Fuel 98 are spec'd as race bikes, with low weight as the emphasis. The Fuel 90 series, and the Fuel 80 are spec'd as adventure bikes, with control and steering rigidity the premium consideration.

To go with their racing style, we also added some technology to the 98 and 100 framesets. First, both bikes get new carbon chainstays and seatstays, further reducing their weight. They also get a Ti hardware kit. Finally, the top of the line Fuel 100 has our new OCLV MC carbon link which even further reduces its weight.

Geometry

The regular Fuel uses Trek's race-proven Pro Geometry, explained on page 10. The Fuel WSD uses an adapted version of the WSD geometry on the WSD ATB hardtails. It varies slightly to accommodate the suspension, but handling and fit are very similar.

Ride

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

The Fuel 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 Fuel ideal for racing in technical terrain, or having fun on a short ride after work. It's 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 Fuel uses ZR9000 aluminum frame technology. A very oversize, butted and shaped down tube creates a rigid structure between the bottom bracket and head tube, for frame stiffness and strength. Speaking of frame strength, we even added a big butterfly gusset under the head tube.

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

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

The rocker design of the Fuel 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 Fuel are almost all forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

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

Fuel bikes have 3 water bottle mounts, except WSD models have 2.
### Gear Table

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<th>Gearset</th>
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<td>34:1</td>
<td>17</td>
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### BIKE WEIGHT

24.1 lb.
10.94 kg.

### Fit Table

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<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider height</th>
<th>Handlebar</th>
<th>Stem</th>
<th>Crank</th>
<th>Seatpost</th>
<th>Steerer</th>
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<td>192</td>
<td>105</td>
<td>175</td>
<td>350</td>
<td>255.6</td>
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</table>

### Fuel 100

**Frame Set**

- **Main Tubes**: ZR9000 aluminum
- **Stays**: Carbon w/OCLV-MC rocker and Ti links

**Fork**: RockShox SID Race

**Rear Shock**: Foxx Float RC, air/oil, adj. rebound, lockout lever

**Headset**: Dia-Compe S-6 Aheadset, alloy

**Controls**

- **Handlebar**: Bontrager Race Lite
- **Stem**: Bontrager Race Lite
- **Shift Levers**: Shimano Deore XT RapidFire SL
- **Brake Levers**: Integrated brake/shift
- **Shift Levers**: Shimano Deore XT RapidFire SL
- **Brake Levers**: Integrated brake/shift
- **Handlebar**: Bontrager Race Lite
- **Stem**: Bontrager Race Lite
- **Shift Levers**: Shimano Deore XT RapidFire SL
- **Brake Levers**: Integrated brake/shift
- **Shift Levers**: Shimano Deore XT RapidFire SL
- **Brake Levers**: Integrated brake/shift

**Drive Train**

- **Front Derailleur**: Shimano Deore XT
- **Rear Derailleur**: Shimano XTR SGS
- **Crankset**: Bontrager Race Lite 44/32/22
- **BB**: Bontrager Race, ISIS splined
- **Chain**: Shimano HG-92
- **Cassette**: Shimano Deore XT 11-34, 9spd

**Wheels**

- **Front Wheel**: Btrg Race Lite ATB, tubeless compatible, 24°
- **Rear Wheel**: Btrg Race Lite ATB, tubeless compatible, 28°

**Brakes**

- **Avid Single Digit Ti, linear pull
- **Pedals**: Time ATAC Carbon, clipless

**Colors**

Starry Night/Candy Blue • White/Red decals • Red fork

**Key features:**

- **Rider**: Racer
- **Frameset**: ZR9000- stiff, strong, and lightweight
- **Fuel suspension system**: Hardtail feel with extra comfort and traction
- **Wheelset**: Bontrager tubeless compatible wheelsets- light, low maintenance, and work with regular or tubeless tires
- **Tubeless compatible- no pinch flats
- **Components**: Race level (XTR and XT)- precise, light, and durable
- **SID Race and Float RC**: total tuning adjustments
Fuel 98

FRAMESET
MAIN TUBES .... ZR9000 aluminum
STAYS ......... Carbon with Ti links
FRAME weight .... 4.8 lb (2.16 kg)
FORK ......... RockShox Duke Race
Tire size .... 80
Axle-crown length .... 451
REAR SHOCK .... Fox Float R, air/oil, adjustable rebound
Stroke .... 1.5
Length .... 6.5
Width .... .86
Eyelets .... 6
HEADSET .... SAS Aheadset, alloy
Size .... 25.4/34.0/30.0
Stack height .... 27.0

CONTROLS
HANDLEBAR .... Bontrager Race
Clamp diameter .... 25.4
STEM ......... Bontrager Race
Steerer clamp height .... 44.5
SHIFT LEVERS .... Shimano Deore XT RapidFire SL
BRAKE LEVERS .... Integrated brake/shift
GRIPS ......... Bontrager Ergo

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

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
25.1 lb.
11.40 kg.

WHEELSET
FRONT WHEEL .... Btrg Race Modified, tubeless compatible, 24°
E.R.D., mm .... 539
Rim strip .... Tubetless
FRONT TIRE .... Bontrager Super-X, folding
Tire size .... 49/48
REAR WHEEL .... Btrg Race Modified, tubeless compatible, 28°
E.R.D., mm .... 542
Rim strip .... Tubetless
REAR TIRE .... Bontrager Super-X, folding
Tire size .... 49/48
SPOKES ......... DT 14/15G butted stainless, alloy nipples
Front, mm .... 251, Radial
Rear, mm .... 267/269, 3x
INNER TUBES .... Presta valve, ultra light

OTHER
SEATPOST ......... Bontrager Race
Outer diameter, mm .... 31.6
SADDLE ......... Bontrager FS 2000, Cro-Moly/leather
BRAKES ......... Avid Single Digit 5, linear pull
PEDALS ......... Time ATAC, clipless
Axe diameter .... 9/16"
SEAT BINDER .... Alloy w/integral bolt
Inner diameter, mm .... 36.4
ADDITIONALS .... 3 water bottle mounts (2 on 15.5, 17.5), Wrench
Force shock pump

COLORS
Georgia Blue/Bright Silver • Black/Silver decals • Electric Ice Blue forke

Key features:
Rider: Racer
Frameset
ZR9000- stiff, strong, and lightweight
Pro geometry- Excellent high speed handling
Fuel suspension system- Hardtail feel with extra comfort and traction
Wheelset
Bontrager tubeless compatible wheelsets- light, low maintenance, and work with regular or tubeless tires
Bontrager Super-X- fast, all-condition tires
Components
Race level (XTR and XT)- precise, light, and durable
Duke Race and Float R- light, wide range air-spring tuning
Fuel 90

FRAMESET

MAIN TUBES ........ ZR9000 aluminum
STAYS ................. ZR9000 aluminum
Fork .................... Manitou Black Elite, adjustable travel (+20mm)
REAR SHOCK ........... Fox Float, air/oil

CONTROLS

HANDLEBAR ............ Bontrager Crowbar Comp
STEM ..................... Bontrager Select
SHIFT LEVERS .......... Shimano Deore LX RapidFire+
BRAKE LEVERS ......... Integrated brake/shift
GRIPS .................... Bontrager Ergo

WHEELSET

FRONT WHEEL .......... Bontrager Select ATB, 24°
E.R.D., mm 541
Rim strip Velox 19mm
FRONT TIRE .......... Bontrager Jones AC, folding
Tire size 4954
REAR WHEEL .......... Bontrager Select ATB, 28°
E.R.D., mm 541
Rim strip Velox 22mm
REAR TIRE .......... Bontrager Jones AC, folding
Tire size 4954

BIKE WEIGHT

27.7 lb.
12.58 kg.

FIT

Frame Size 15.5 17.5 19.5 21.5
Rider height Inches 68 71 74 77
Handlebar Width, mm 620 620 620 620
Stem Length, mm 105 105 105 120
Crank Length, mm 170 175 175 175
Seatpost Length, mm 300 390 390 390
Steerer Length, mm 199.0 219.0 239.0 259.0

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

Fuel 90 Disc

FRAMESET

MAIN TUBES ........ ZR9000 aluminum
STAYS ................. ZR9000 aluminum
Fork .................... Manitou Black Elite, adjustable travel (+20mm)
REAR SHOCK ........... Fox Float, air/oil

CONTROLS

HANDLEBAR ............ Bontrager Crowbar Comp
STEM ..................... Bontrager Select
SHIFT LEVERS .......... Shimano Deore LX RapidFire+
BRAKE LEVERS ......... Integrated brake/shift
GRIPS .................... Bontrager Ergo

WHEELSET

FRONT WHEEL .......... Bontrager Race Disc, 28°
E.R.D., mm 530
Rim strip Velox 22mm
FRONT TIRE .......... Bontrager Race Disc, 28°
Tire size 530
REAR WHEEL .......... Bontrager Race Disc, 28°
E.R.D., mm 530
Rim strip Velox 22mm
REAR TIRE .......... Bontrager Race Disc, 28°
Tire size 530

BIKE WEIGHT

28.8 lb.
13.08 kg.

Key features:

Rider: Every day enthusiast or Racer
Frameset
ZR9000- stiff, strong, and lightweight
Pro geometry- Excellent high speed handling
Fuel suspension system- Hardtail feel with extra comfort and traction
Wheelset
Bontrager Wheelsystems- light, low maintenance
Bontrager Jones AC- all-round treads
Components
All-round level (XT/LX)- 9 speed, powerful brakes
**Fuel 90 WSD**

**FRAMESET**
- **MAIN TUBES** .... ZR9000 aluminum
- **STAYS** .... ZR9000 aluminum
- **FORK** ............... Manitou Black Elite Diva, adj. travel (+20mm)
- **REAR SHOCK** ........ Fox Float, air/oil
- **HEADSET** ........ SAS Aheadset, alloy

**CONTROLS**
- **HANDLEBAR** .... Bontrager Race
- **STEM** ............... Bontrager Select
- **SHIFT LEVERS** ...... Shimano Deore LX RapidFire+
- **BRAKE LEVERS** ...... Integrated brake/shift
- **GRIPS** .............. Bontrager Race, dual density

**DRIVETRAIN**
- **FT DERAILLEUR** .... Shimano Deore LX
- **RR DERAILLEUR** .... Shimano Deore XT SGS
- **CRANKSET** ............ Bontrager Select 44/32/22
- **BB** ............... Shimano BB-UN52
- **CHAIN** ............ Shimano HG-72
- **CASSETTE** ............ SRAM 7.0 11-32, 9spd

**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**
- 27.5 lb.
- 12.49 kg.

**FIT**
- **Frame** .... Size 14 16 18
- **Rider height** .... Inches 61 62 66
- **Handlebar** .... Width, mm 580 580 580
- **Stem** .... Length, mm 60 75 90
- **Crank** .... Length, mm 170 175 175
- **Seatpost** .... Length, mm 300 390 390
- **Steerer** .... Length, mm 184.0 184.0 199.0

**WHEELSET**
- **FRONT WHEEL** .... Bontrager Select ATB, 24°
- **FRONT TIRE** .... Bontrager Jones AC, folding
- **REAR WHEEL** .... Bontrager Select ATB, 28°
- **REAR TIRE** .... Bontrager Jones AC, folding
- **SPOKES** ........ DT 14/15G butted stainless, alloy nipples
- **INNER TUBES** .... Presta valve, ultra light

**OTHER**
- **SEATPOST** .... Bontrager Select
- **SADDLE** ........... Bontrager FS 2000 WSD, CrMo
- **BRAKES** ........... Avid Single Digit 3, linear pull
- **PEDALS** ............ Shimano SPD M515, clipless
- **SEAT BINDER** ...... Alloy w/integral QR
- **ADDITIONALS** ...... 2 water bottle mounts (1 on seatpost), Wrench Force shock pump

**COLORS**
- Georgia Blue/Bright Silver • Silver/White decals • Candy Chrome fork

**Key features:**
- **Rider:** Woman every day enthusiast or Racer
- **Frameset:** 
  - ZR9000- stiff, strong, and lightweight
  - WSD geometry- Fit and performance especially for a woman
  - Fuel suspension system- Hardtail feel with extra comfort and traction
- **Wheelset:** 
  - Bontrager Wheelsystems- light, low maintenance
  - Bontrager Jones AC- all-round treads
- **Components:** 
  - All-round level (LX)- 9 speed, powerful brakes
  - WSD- forks, handlebars, grips, saddle, and cranks for a woman’s body and riding style
Fuel 80

FRAMESET

MAIN TUBES ......... ZR9000 aluminum
STAYS ................. ZR9000 aluminum
FORK .................. Manitou Black Comp, adj. travel (+20mm)
REAR SHOCK ........... Fox Float, air/oil
HEADSET ............. STR Aheadset

CONTROLS

HANDLEBAR .......... Bontrager Crowbar Sport
STEM ................. Bontrager Sport
SHIFT LEVERS ...... Shimano Alivio RapidFire+
BRAKE LEVERS ..... Alloy, direct pull
GRIPS ............... Bontrager Ergo

DRIVEetrain

FT DERAILEUR .... Shimano Alivio
RR DERAILEUR .... Shimano Deore SGS
CRANKSET .......... Bontrager Sport 44/32/22
CHAIN ............... IG-31
CASSETTE .......... SRAM 5.0 11-32, 8spd

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

BIKE WEIGHT

30.1 lb.
13.67 kg.

WHEELSET

FRONT WHEEL ...... Alloy, QR hub, 32°, Bontrager Corvair rim
FRONT TIRE ......... Bontrager Jones AC
REAR WHEEL ...... Alloy, QR hub, 32°, Bontrager Corvair OSB rim
REAR TIRE .......... Bontrager Jones AC
SPOKES .......... DT 14G stainless
INNER TUBES ...... Presta valve

OTHER

SEATPOST .......... Bontrager Sport
SADDLE .......... Bontrager FS 2000
BRAKES ............ Alloy direct pull
PEDALS ............. Alloy w/clips and straps
SEAT BINDER ...... Alloy w/integral QR
ADDITIONALS ...... 3 water bottle mounts (2 on 15.5, 17.5), shock pump
COLORS

Starry Night/Platinum • White/Red decals • Red fork

Key features:

Rider: Every day enthusiast or aggressive newbie
Frameset

ZR9000- stiff, strong, and lightweight
Pro geometry- Excellent high speed handling
Fuel suspension system- Hardtail feel with extra comfort and traction
Wheelset

Bontrager Corvair/OSB rims- strong and light
Bontrager Jones AC- all-round treads
Components

Enthusiast level- wider bars, powerful brakes, help rider conquer technical terrain
STP (Soft Tail Pro)

**For 2002**

The STP was introduced in the 2000 model year. The frame is unchanged.

**Geometry**

The STP uses Trek’s race-proven Pro Geometry. Sizes are only offered down to size M because smaller frame sizes would not have room for the rear shock.

**Ride**

Today’s race courses are generally smoother, and the racers fitter, than in the past. Racers have very strong legs, which can effortlessly absorb a lot of terrain. Racers don’t need a lot of suspension, instead looking for low weight. Only one bike offers exactly what these racers need. The STP is a racing suspension bike for today and the future.

The STP frame is lighter than some racing hardtails. The suspension reacts only on the biggest hits, or when pedaling in the saddle. The rest of the time the STP feels like a very light, OCLV hardtail. In this capacity, the frame offers outstanding pedaling efficiency.

The STP 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 improved traction. The traction advantages are full-time, both climbing and braking hard. This combination makes the STP ideal for racing.

**Frame details**

The STP uses OCLV frame technology. Inside the head tube, bonded aluminum ‘top hats’ support the headset cups. Rather than a continuous tube, the top hats allow a significant weight reduction. Mechanics need to exercise care when removing headset cups to make sure a removal tool is inside the top hats, not outside where hammering can damage the frame.

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

When the rear wheel hits a bump, the frame must flex. Carbon composite is the ideal material for this application, having an almost infinite fatigue life. In addition, our engineers designed the STP so more than just the chainstays flex; the down tube also flexes. The frame is designed as a system, not just as an added shock.

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

The STP seat tube uses a fiberglass 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.

The STP design incorporates a special, built-in chainstay protector to resist chainslap damage to the carbon chainstays.

The STP does not have fittings for disc brakes, which could transmit heat into the carbon stays.

All STP bikes have 2 water bottle mounts.

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>M</th>
<th>L</th>
<th>XL</th>
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### STP 400

#### FRAMESET
- **Main Tubes**: OCLV 150, carbon fiber composite
- **Stays**: OCLV 150, carbon fiber composite

#### GEARING
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<td>34</td>
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#### WHEELSET
- **Front Wheel**: Btrg Race Lite ATB, tubeless compatible, 24°
  - E.R.D., mm: 539
  - Rim strip: Tubeless
- **Front Tire**: Bontrager Super-X, tubeless
  - Tire size: 49/48
- **Rear Wheel**: Bontrager Race Lite ATB, tubeless compatible, 28°
  - E.R.D., mm: 542
  - Rim strip: Tubeless, asymmetric
- **Rear Tire**: Bontrager Super-X, tubeless
  - Tire size: 49/48
- **Spokes**: DT Revolution 14/17G, alloy nipples
- **Front Spoke Size**: 251, Radial
- **Rear Spoke Size**: 207/209, 3x

#### BIKE WEIGHT
- **Weight**: 22.1 lb.
- **Weight**: 10.03 kg.

#### FIT

<table>
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<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider Height</th>
<th>Handlebar</th>
<th>Stem</th>
<th>Crank</th>
<th>Seatpost</th>
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<td>105</td>
<td>175</td>
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</table>

#### Key Features:
- **Rider**: Racer
- **Frameset**
  - OCLV- Elite racing frame material feels light and fast
  - Pro geometry- Excellent high speed handling
  - STP (Soft Tail Pro) suspension system- Hardtail feel with extra comfort and traction, no pivot maintenance
- **Wheelset**
  - Bontrager tubeless compatible wheelsets- light, low maintenance, and work with regular or tubeless tires
- **Components**
  - Race level (XTR and XT)- precise, light, and durable
  - SID Race fork and Race rear shock- low weight with race tuning

#### Colors
- Smoke Carbon/Candy blue • White/Red decals • Electric Blue fork
For 2002

The Y design was first introduced by Trek for the 1995 model year. Since then, it has become what is likely the most popular full suspension design of all time.

Geometry

The Y uses traditional NORBA geometry, 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 Y features makes the Y 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 Y is an all-mountain design that's sure to make many a rider smile (it's already done that for thousands!).

The Y offers a good compromise of frame rigidity, pedaling efficiency, longer travel, lower weight, low maintenance, and good suspension feel. The Y 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 affect the suspension action. This provides efficient pedaling, with zero ‘inch-worming’.

Frame details

The Y uses Alpha frame technology.

Full 'top tube' (actually, the side of the main frame) cable routing keeps the cables out of the muck for friction free shifting and braking.
Y 26

FRAMESET
MAIN TUBES ....... Alpha aluminum
STAYS ............... Cro-Moly
FORK ............... RST Capa CL

REAR SHOCK ....... RST 20B colover

HEADSET ........... Steel

CONTROLS
HANDLEBAR ......... Steel
STEM ............... Alloy quick change, direct connect
SHIFT LEVERS ....... Shimano EF29
BRAKE LEVERS ...... Integrated brake/shift
GRIPS .............. Oasis, dual density

DRIVETRAIN
FT DERAILLEUR .... Shimano C050
RR DERAILLEUR .... Shimano Acera-X
CRANKSET .......... FCM55, alloy, 42/34/24
BB .................. Semi-cartridge
CHAIN .............. KMC Z-51
CASSETTE .......... Sun Race 13-30, 7spd

GEARING
24 34 42
13 48 69 85
15 42 59 73
17 37 52 65
19 33 47 58
22 29 41 50
25 25 36 44
30 21 30 37

BIKE WEIGHT
30.8 lb. 13.98 kg.

FIT
Frame Size 17 18 21
Rider height Inches 68 72 75
Handlbar Width, mm 580 600 600
Stem Length, mm 90 90 110
Crank Length, mm 170 170 175
Seatpost Length, mm 300 350 350
Steerer Length, mm 221 231 231

WHEELSET
FRONT WHEEL ...... Alloy, QR hub, 36°, Matrix 750 rim
FRONT TIRE ....... Bontrager Connection
REAR WHEEL ...... Alloy, QR hub, 36°, Matrix 750 rim
REAR TIRE ....... Bontrager Connection
SPOKES ............ 14G stainless

OTHER
SEATPOST .......... Alloy micro-adjust
SADDLE ............ Trek ATB Comfort
BRAKES .......... Alloy direct pull
PEDALS .......... Platform

ADDITIONALS ......... 1 water bottle mount

COLORS
Ball Burnished/Candy Blue • Black/Red decals • Candy Blue fork

Key features:
Rider: Pleasure rider or aggressive newbie
Frameset
Y design- Our most popular suspension design ever
URT- great overall performance
Wheelset
Matrix 750 rims- strong and light
Bontrager Connection tires- all-round treads
Components
Recreational level- coil spring suspension, soft saddle, large-platform pedals make mountain biking more comfortable
OCLV HC Hardtail

For 2002

The OCLV HC was introduced in the 1999 model year. The frame is unchanged.

Geometry

The regular OCLV HC hardtail uses Trek’s race-proven Pro Geometry.

Ride

The OCLV HC hardtail frame is one of the lightest racing hardtails ever produced. Of the bikes that can compete with this frame in weight, few if any can offer the pedaling efficiency and outstanding frame rigidity that makes the 9.8 handle so well.

Like with other OCLV bikes, high lateral frame rigidity is coupled with unique vertical compliance. This bike soaks up bumps in ways that you don’t expect. The 9.8 comfort will surprise anyone who has ridden other efficient frames, which are usually quite harsh.

Frame details

The OCLV HC hardtail uses OCLV HC frame technology. Inside the head tube, bonded aluminum ‘top hats’ support the headset cups. Rather than a continuous tube, the top hats allow a significant weight reduction. Mechanics need to exercise care when removing headset cups to make sure a removal tool is inside the top hats, not outside where hammering can damage the frame.

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

The dropouts on the OCLV HC hardtail are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

The OCLV HC hardtail seat tube uses a fiberglass 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.

This frame uses aluminum chainstays. The primary reason for the aluminum is to allow a disc brake. Disc brakes generate a lot of heat, and our engineers did not feel comfortable having heat dissipate into the composite. With aluminum, there is no problem. The mount is Hayes style. As an added benefit, the aluminum stands up to chainslap better than carbon, so we didn’t have to engineer extra protection as we do on other OCLV models.

OCLV HC hardtail frames have 3 water bottle mounts

FOR THE MECHANIC

Removing Headset Cups

When removing an headset in an OCLV frame, make sure the headset removal tool is engaging the headset cup. OCLV framesets do not utilize a continuous headtube, but instead use two short inserts to support the headset cups. If the headset tool is outside the insert rather than inside the insert and pressing on the cup, frame damage can result.
Elite 9.8

FRAMESET
MAIN TUBES ... OCLV HC, carbon fiber composite
STAYS ............ OCLV/ aluminum
FORK .............. RockShox SID SL
HEADSET ......... SAS Aheadset, alloy

CONTROLS
HANDLEBAR ...... Bontrager Race
STEM ............. Bontrager Race
SHIFT LEVERS ..... Shimano Deore XT RapidFire SL
BRAKE LEVERS ..... Integrated brake/shift
GRIPS ........ Bontrager Ergo

DRIVETRAIN
FT DERAILLEUR .... Shimano Deore XT
RR DERAILLEUR .... Shimano XTR SGS
CRANKSET ........ Bontrager Race 44/32/22
BB ........ Bontrager Race, ISIS splined
CHAIN ........... Shimano HG-92
CASSETTE .......... Shimano Deore XT 11-34, 9spd

WHEELSET
FRONT WHEEL ...... Btrg Race Modified, tubeless compatible, 24°
FRONT TIRE ........ Bontrager Super-X, folding
REAR WHEEL ...... Btrg Race Modified, tubeless compatible, 28°
REAR TIRE ......... Bontrager Super-X, folding
SPOKES ........... DT 14/15G butted stainless, alloy nipples
INNER TUBES ...... Presta, for display

OTHER
SEATPOST .......... Bontrager Race
SADDLE .......... Bontrager FS 2000, Gel, Cro-Moly/leather
BRAKES .......... Avid Single Digit 5, linear pull
PEDALS .......... Time ATAC, clipless
SEAT BINDER ...... Alloy w/integral bolt
ADDITIONALS ...... 3 water bottle mounts

COLORS
Starry Night/Candy Blue • White/Red decals • Black fork

GEARING

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<tr>
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<td>34</td>
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<td>11-34, 9spd</td>
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BIKE WEIGHT

23.9 lb. 10.85 kg.

FIT

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Key features:

Rider: Racer
Frameset
- OCLV HC: Our best racing frame- fast and efficient
- Pro geometry: Excellent high speed handling
Wheelset
- Bontrager tubeless compatible wheelsets: light, low maintenance, and work with regular or tubeless tires
Components
- Performance level (XTR and XT): Race features
New for 2002

These frames were formerly known as Alpha SLR, but for 2002 we changed the frame material to ZR9000. The result of the lighter tubing is 15% lighter, 15% stronger frames. Other design details remain the same.

Geometry

The regular ZR9000 ATB uses Trek’s race-proven Pro Geometry. The ZR9000 ATB WSD uses our proven WSD geometry.

Ride

These are race bikes. As such, the ZR9000 ATB’s frame offers outstanding pedaling efficiency. This exceptional frame rigidity also gives the ZR9000 ATB it’s ‘riding on rails’ cornering ability. This explains why these are some of the most popular bikes on the race circuit today. Even our Pros have ridden these frames to success (although mostly they ride our high end OCLV).

Frame details

The ZR9000 ATB uses double butted, and shaped, ZR9000 aluminum frame technology. An oversize 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 at the top and bottom to support the headset cups.

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

The fittings, like dropouts and seatstay yoke, on the ZR9000 ATB are almost all forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

ZR9000 ATB bikes have 2 water bottle mounts, except the XS WSD. This frame size does not have a tall enough seat tube to allow a water bottle mount to be used.

The ZR9000 ATB frame uses a special dropout to accommodate a disc brake adapter. This adapter provides mounting for an International style rear disc brake.

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<th>ZR9000 WSD ATB</th>
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8500

**FRAMESET**

**MAIN TUBES** .... ZR9000 aluminum
**STAYS** .......... ZR9000 aluminum

Frame weight 3.4 lb (1.54 kg)

**FORK** .... RockShox Duke Race

Travel, mm 80
Axle-crown length, mm 451.0

**HEADSET** .......... SAS Aheadset, alloy

Size 25.4/34.0/30.0
Stack height, mm 27.0

**CONTROLS**

**HANDLEBAR** .... Bontrager Race

Clamp diameter, mm 25.4

**STEM** .......... Bontrager Race

Steerer clamp height, mm 44.5

**SHIFT LEVERS** .... Shimano Deore XT RapidFire SL

**BRAKE LEVERS** .... Integrated brake/shift

**GRIPS** .......... Bontrager Ergo

**DRIVETRAIN**

**FT DERAILLEUR** .... Shimano Deore XT

Cable routing Top pull
Attachment 34.9 mm/1 3/8"

**RR DERAILLEUR** .... Shimano XTR SGS

**CRANKSET** .......... Bontrager Race 44/32/22

Bolt hole circle, mm 64/104

**BB** .......... Bontrager Race, ISIS splined

Shell x axle, mm 73 x 113, Splined, ISIS

**CHAIN** .......... Shimano HG-72

Chain type 9 speed
Chain length (links) 108

**CASSETTE** ........ Shimano HG70 11-32, 9spd

**BIKE WEIGHT**

23.5 lb.
10.67 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

8500 Disc

**WHEELSET**

**FRONT WHEEL** .... Bontrager Race ATB, tubeless compatible, 24°

E.R.D., mm 539

Rim strip

**FRONT TIRE** .... Bontrager Jones AC, folding

Tire size 49/54

**REAR WHEEL** .... Bontrager Race ATB, tubeless compatible, 28°

E.R.D., mm 542

Rim strip

**REAR TIRE** .... Bontrager Jones AC, folding

Tire size 49/54

**SPOKES** ....... DT 14/15G butted stainless, alloy nipples

Front, mm 251, Radial
Rear, mm 267/269, 3x

**INNER TUBES** .... Presta valve, ultra light, for display

**OTHER**

**SEATPOST** .... Bontrager Race

Outer diameter, mm 31.6

**BRAKE** .......... Bontrager FS 2000, Cro-Moly/leather

**PEDALS** .......... Shimano Deore XT RapidFire SL

Axle diameter 91/16"

**SEAT BINDER** .... Alloy w/integral bolt

Outer diameter, mm 36.4

**ADDITIONALS** .... 2 water bottle mounts

**COLORS**

Georgia Blue/Starry Night • Black/Silver decals • Electric Ice Blue fork

**BIKE WEIGHT**

24.1 lb.
10.94 kg.

**GEARING**

BRAKE LEVERS .... Hydraulic, attached to brake

**GRIPS** .......... Bontrager Ergo

**WHEELSET**

**FRONT WHEEL** .... Bontrager Race Modified Disc, 28°

E.R.D., mm 539

Rim strip Velox 22mm

**REAR WHEEL** .... Bontrager Race Modified Disc, 28°

E.R.D., mm 539

Rim strip Velox 22mm

**SPOKES** ....... DT 14/15G butted stainless, alloy nipples

Front, mm 264/266, 3x
Rear, mm 264/265, 3x

**OTHER**

**BRAKES** .......... Hayes Mag, full hydraulic disc

Rotor diameter 6.3 in.
Bolt circle diameter 44mm

Key features:

**Rider:** Racer

**Frameset**

ZR9000- light, strong, and stiff
Pro geometry- Excellent high speed handling

**Wheelset**

Bontrager tubeless compatible wheelsets- light, low maintenance, and work with regular or tubeless tires
Bontrager Super-X- fast, all-conditions tread

**Components**

Racing level (XTR and XT)- light, precise, and durable
SID XC fork- light, highly tunable
8000

FRAMESET

MAIN TUBES ....... ZR9000 aluminum
STAYS ................ ZR9000 aluminum
Frame weight 3.4 lb (1.54 kg)
Fork ............. RockShox Duke XC
Front, mm 80
Axle-crown length, mm 451.0
HEADSET .......... SAS Aheadset, alloy
Size 25.4/34.0/33.0
Stack height, mm 27.0

CONTROLS

HANDLEBAR ........... Bontrager Race
Clamp diameter, mm 25.4
STEM .................. Bontrager Select
Stem clamp height, mm 41.0
SHIFT LEVERS ...... Shimano Deore LX RapidFire+
BRAKE LEVERS ...... Integrated brake/shift
GRIPS ............... Bontrager Ergo

DRIVETRAIN

FT DERAILLEUR .... Shimano Deore LX
Cable routing Top pull
Attachment 54.9 mm/ 1 3/8”
RR DERAILLEUR .... Shimano Deore XT SGS
CRANKSET .......... Bontrager Select 44/32/22
Bolt hole circle, mm 64/104
BB ................. Shimano BB-UN52
Shell x axle, mm 73 x 113, Square
CHAIN ............. Shimano HG-53
Chain type 9 speed
Chain length (links) 108
CASSETTE .......... Shimano HG50 11-32, 9spd

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

25.6 lb.
11.62 kg.

WHEELSET

FRONT WHEEL ..... Bontrager Select ATB, 24°
E.R.D., mm 541
Rim strip Velox 19mm
FRONT TIRE ....... Bontrager Jones AC, folding
Tire size 49/54
REAR WHEEL ...... Bontrager Select ATB, 28°
E.R.D., mm 541
Rim strip Velox 22mm
REAR TIRE ......... Bontrager Jones AC, folding
Tire size 49/54
SPOKES ............ DT 14/15G butted stainless, alloy nipples
Front, mm 255, Radial
Rear, mm 268/269, 3x
INNER TUBES ...... Presta valve, ultra light

OTHER

SEATPOST .......... Bontrager Select
Outer diameter, mm 31.6
SADDLE ............. Bontrager FS2000, Cro-Moly
BRAKES ............ Avid Single Digit 3, linear pull
PEDALS ............. Shimano SPD M515, clipless

ADDITIONALS ...... 2 water bottle mounts

COLORS

Bright Silver/Starly Night • Black/Red decals • Red fork

Key features:
Rider: Racer
Frameset
ZR9000- light, strong, and stiff
Pro geometry- Excellent high speed handling
Wheelset
Bontrager Wheelsystems- light, low maintenance
Components
All-round level (XT and LX) -racing features at an affordable price
8000 WSD

FRAMESET
MAIN TUBES ....... Alpha aluminum
STAYS ............... Alpha aluminum
FORK ............... RockShox Duke XC, light springs
HEADSET ........... SAS Aheadset, alloy

CONTROLS
HANDLEBAR ........ Bontrager Race
STEM ............... Bontrager Select
SHIFT LEVERS ...... Shimano Deore LX RapidFire+
 BRAKE LEVERS ..... Integrated brake/shift
GRIPS .............. Bontrager Ergo

DRIVETRAIN
FT DERAILLEUR .... Shimano Deore LX
RR DERAILLEUR .... Shimano Deore XT SGS
CRANKSET .......... Bontrager Select 44/32/22
BB ................. Shimano BB-UN52
CHAIN ............. Shimano HG-53
CASSETTE .......... Shimano HG50 11-32, 9spd

GEAR
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
25.5 lb.
11.58 kg.

WHEELSET
FRONT WHEEL ...... Bontrager Select ATB, 24"
FRONT TIRE ........ Bontrager Jones AC, folding
REAR WHEEL ...... Bontrager Select ATB, 28"
REAR TIRE ........ Bontrager Jones AC, folding
SPokes ............. DT 14/15G butted stainless, alloy nipples

OTHER
SEATPOST ........... Bontrager Select
SEAT BINDER ........ Alloy w/integral bolt
ADDITIONALS ...... 2 water bottle mounts, rack mounts (1 bottle/no rack on 14)

COLORS
Frost/Starry Night • Black/White decals • Black fork

Key features:
Rider: Woman Racer
Frameset
  ZR9000- light, strong, and stiff
  WSD geometry- Fit and performance for a woman's body
Wheelset
  Bontrager Wheelsystems- light, low maintenance
Components
  All-round level (XT and LX) -racing features at an affordable price
  WSD forks, handlebars, grips, saddle, and cranks to fit and perform for a woman
New for 2002

Alpha SLR ATB frames, both standard and WSD, were formerly Alpha ZX. This means these frames are now double-butted 6061 T6 aluminum, and the men's frames now use Pro geometry.

Geometry

The regular Alpha SLR hardtail uses our race-proven Pro geometry, which has its roots in racing. The Alpha SLR WSD hardtail uses our proven WSD geometry.

Ride

These are race bikes. As such, the Alpha SLR hardtail's frame offers outstanding pedaling efficiency. This exceptional frame rigidity also gives the Alpha SLR it's 'riding on rails' cornering ability. This explains why these are some of the most popular bikes on the race circuit today.

Frame details

The Alpha SLR hardtail uses Alpha SLR aluminum frame technology. An oversize 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 at the top and bottom to support the headset cups.

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

The fittings, like dropouts and seatstay yoke, on the Alpha SLR ATB are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

Alpha SLR bikes have 2 water bottle mounts, except the XS WSD. This frame size does not have a tall enough seat tube to allow a water bottle mount to be used.

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

| Frame sizes | 15.5 | 17.5 | 19.5 | 21.5 |
| Head angle  | 71.0 | 71.0 | 71.0 | 71.0 |
| Seat angle  | 73.5 | 73.0 | 73.0 | 72.5 |

| Standover   | 706  | 742  | 780  | 821  |
| Seat tube   | 394  | 445  | 495  | 546  |
| Head tube   | 105  | 125  | 145  | 165  |
| Eff top tube| 550  | 588  | 625  | 641  |
| Chainstays  | 424  | 424  | 424  | 424  |
| BB height   | 297  | 297  | 297  | 300  |
| Offset      | 42   | 42   | 42   | 42   |
| Trail       | 71   | 71   | 71   | 71   |
| Wheelbase   | 1030 | 1064 | 1101 | 1114 |

| Standover   | 27.8 | 29.2 | 30.7 | 32.3 |
| Seat tube   | 15.5 | 17.5 | 19.5 | 21.5 |
| Head tube   | 4.1  | 4.9  | 5.7  | 6.5  |
| Eff top tube| 21.7 | 23.1 | 24.6 | 25.2 |
| Chainstays  | 16.7 | 16.7 | 16.7 | 16.7 |
| BB height   | 11.7 | 11.7 | 11.7 | 11.8 |
| Offset      | 1.7  | 1.7  | 1.7  | 1.7  |
| Trail       | 2.8  | 2.8  | 2.8  | 2.8  |
| Wheelbase   | 40.6 | 41.9 | 43.4 | 43.9 |

| Frame sizes | XS  | S  | M  |
| Head angle  | 70.0| 70.0| 70.0|
| Seat angle  | 75.0| 74.0| 73.5|

| Standover   | 670 | 700 | 740 |
| Seat tube   | 356 | 406 | 457 |
| Head tube   | 90  | 90  | 105 |
| Eff top tube| 518 | 532 | 563 |
| Chainstays  | 424 | 424 | 424 |
| BB height   | 289 | 289 | 293 |
| Offset      | 41.9| 41.9| 41.9|
| Trail       | 78  | 78  | 78  |
| Wheelbase   | 1018| 1023| 1051|

| Standover   | 26.4| 27.6| 29.1 |
| Seat tube   | 14.0| 16.0| 18.0 |
| Head tube   | 3.5 | 3.5 | 4.1  |
| Eff top tube| 20.4| 21.0| 22.2 |
| Chainstays  | 16.7| 16.7| 16.7 |
| BB height   | 11.4| 11.4| 11.6 |
| Offset      | 1.6 | 1.6 | 1.6  |
| Trail       | 3.1 | 3.1 | 3.1  |
| Wheelbase   | 40.1| 40.3| 41.4 |
## 6700

### FRAMESET

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Alpha SLR aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAYS</td>
<td>Alpha SLR aluminum</td>
</tr>
</tbody>
</table>

- Fork weight: 3.6 lb (1.65 kg)
- Axle-crown length: 451 mm

### CONTROLS

<table>
<thead>
<tr>
<th>HANDLEBAR</th>
<th>Bontrager Crowbar Sport</th>
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<tbody>
<tr>
<td>STEM</td>
<td>Bontrager Select</td>
</tr>
<tr>
<td>SHIFT LEVERS</td>
<td>Shimano Deore RapidFire+</td>
</tr>
<tr>
<td>BRAKE LEVERS</td>
<td>Avid AD 3L, long pull</td>
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<tr>
<td>GRIPS</td>
<td>Bontrager Ergo</td>
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### DRIVETRAIN

<table>
<thead>
<tr>
<th>FT DERAILLEUR</th>
<th>Shimano Deore</th>
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<tr>
<td>RR DERAILLEUR</td>
<td>Shimano Deore LX SGS</td>
</tr>
<tr>
<td>CRANKSET</td>
<td>Bontrager Select 44/32/22</td>
</tr>
<tr>
<td>BB</td>
<td>Shimano BB-LP27</td>
</tr>
<tr>
<td>CHAIN</td>
<td>Shimano HG-72</td>
</tr>
<tr>
<td>CASSETTE</td>
<td>SRAM 7.0 11-32, 9spd</td>
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### GEARING

<table>
<thead>
<tr>
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<tr>
<td></td>
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<td>36</td>
</tr>
</tbody>
</table>

### BIKE WEIGHT

- 26.7 lb.
- 12.12 kg.

---

## 6700 Disc

### WHEELSET

- **FRONT WHEEL**: Bontrager Superstock, 24°
  - E.R.D., mm: 542
  - Rim strip: Velox 19mm
- **REAR WHEEL**: Bontrager Superstock, 28°
  - E.R.D., mm: 542
  - Rim strip: Velox 22mm
- **FRONT TIRE**: Bontrager Jones AC
  - Tire size: 495/4
- **REAR TIRE**: Bontrager Jones AC
  - Tire size: 495/4

###OTHER

- **SEATPOST**: Bontrager Sport
  - Outer diameter, mm: 31.6
- **BRAKES**: Shimano M420, V type
- **PEDALS**: Shimano SPD M515, clipless
  - Axle diameter: 916°
- **SEAT BINDER**: Alloy w/integral QR
  - Inner diameter, mm: 36.4
- **ADDITIONALS**: 2 water bottle mounts

###COLORS

- Starry Night/Candy Blue • White/Red decals • Red fork
- Autumn Gold • Black/Red decals • Red fork (not available on 6700 Disc)

### BIKE WEIGHT

- 27.8 lb.
- 12.62 kg.

---

Key features:

- **Rider**: Every day enthusiast or aggressive newbie

**Frameset**

- Alpha SLR butted aluminum - light, strong, and stiff
- Pro geometry - Race proven

**Wheelset**

- Bontrager Superstock - light and strong
- Bontrager Jones AC- all-round tread

**Components**

- All-round level (LX and Deore)-all round performance with 9 speed and powerful brakes

---

2002 Trek Technical Manual
**GEARING**

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<thead>
<tr>
<th>Frame</th>
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<td>Rider height</td>
<td>Inches</td>
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<tr>
<td>Handlebar</td>
<td>Width, mm</td>
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<tr>
<td>Stem</td>
<td>Length, mm</td>
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<tr>
<td>Angle</td>
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<tr>
<td>Crank</td>
<td>Length, mm</td>
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<td>350</td>
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<tr>
<td>Steerer</td>
<td>Length, mm</td>
<td>178.2</td>
<td>178.2</td>
<td>193.2</td>
</tr>
</tbody>
</table>

**6700 WSD**

**FRAMESET**

- MAIN TUBES: Alpha SLR aluminum
- STAYS: Alpha SLR aluminum
- FRAME: 4.2 lb (1.91 kg)
- FORK: RockShox Duke C, light springs (Travel, mm: 80, Axle-crown length, mm: 451)
- HEADSET: STR Aheadset (Size: 25.4/34.0/30.0, Stack height, mm: 23.2)

**CONTROLS**

- HANDLEBAR: Bontrager Crowbar Sport (Clamp diameter, mm: 25.4)
- STEM: Bontrager Select (Steerer clamp height, mm: 41.0)
- SHIFT LEVERS: Shimano Deore RapidFire+ BRAKE LEVERS: Alloy, direct pull, woman's reach
- GRIPS: Bontrager Race, dual density

**DRIVETRAIN**

- FT DERRAILLEUR: Shimano Deore (Cable routing: Top pull, Attachment: Plate style w/34.9mm clamp)
- RR DERRAILLEUR: Shimano Deore LX SGS
- CRANKSET: Bontrager Select 44/32/22 (Bolt hole circle, mm: 64/104, Shell x axle, mm: 73 x 113, Square)
- BB: Shimano BB-LP27
- CHAIN: Shimano HG-53 (
  - Chain type: 3/32"
  - Chain length (links): 108)
- CASSETTE: SRAM 7.0 11-32, 9spd

**BIKE WEIGHT**

- 26.1 lb
- 11.85 kg

**WHEELSET**

- FRONT WHEEL: Bontrager Superstock, 24° (E.R.D., mm: 542, Rim strip: Velox 19mm)
- FRONT TIRE: Bontrager Jones AC (Size: 49/54)
- REAR WHEEL: Bontrager Superstock, 28° (E.R.D., mm: 542, Rim strip: Velox 22mm)
- REAR TIRE: Bontrager Joes AC (Size: 49/54)
- SPOKES: DT 14G stainless (Front, mm: 254, Rear, mm: 267/269, 3x)
- INNER TUBES: Presta valve, ultra light

**OTHER**

- SEATPOST: Bontrager Sport (Outer diameter, mm: 31.6)
- SADDLE: Bontrager FS 2000 WSD
- BRAKES: Shimano M420, V type
- PEDALS: Shimano SPD MS15, clipless (Axle diameter: 9/16")
- SEAT BINDER: Alloy w/quick release (Inner diameter, mm: 36.4)
- ADDITIONALS: 2 water bottle mounts, rack mounts (1 bottle/no rack on 14)

**COLORS**

- Candy Blue/Starry Night • White/Red decals • White fork

**Key features:**

**Rider:** Every day woman enthusiast or aggressive newbie

**Frameset**

- Alpha SLR butted aluminum - light, strong, and stiff
- WSD geometry- Fit and performance for her

**Wheelset**

- Bontrager Superstock- light and strong
- Bontrager Jones AC- all-round tread

**Components**

- All-round level (LX and Deore)-all round performance with 9 speed and powerful brakes
- WSD forks, handlebars, grips, saddle, cranks to fit and perform for a woman
**6500**

**FRAMESET**

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Alpha SLR aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAYS</td>
<td>Alpha SLR aluminum</td>
</tr>
<tr>
<td>FORK</td>
<td>Manitou Super 6</td>
</tr>
<tr>
<td>HEADSET</td>
<td>STR Aheadset</td>
</tr>
</tbody>
</table>

**CONTROLS**

| HANDLEBAR        | Bontrager Crowbar Sport, 25mm rise |
| STEM             | Bontrager Sport       |
| SHIFT LEVERS     | Shimano Deore RapidFire+ |
| BRAKE LEVERS     | Alloy, direct pull    |
| GRIPS            | Bontrager Ergo        |

**DRIVETRAIN**

| FT DERAILLEUR    | Shimano Deore        |
| RR DERAILLEUR    | Shimano Deore LX SGS |
| CRANKSET         | Bontrager Sport 44/32/22 |
| BB               | Shimano BB-LP27      |
| CHAIN            | Shimano HG-72        |

**GEARING**

<table>
<thead>
<tr>
<th>22</th>
<th>32</th>
<th>44</th>
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<tr>
<td>11</td>
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<td>32</td>
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<td>26</td>
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</tbody>
</table>

**BIKE WEIGHT**

27.5 lb.  
12.49 kg.

**WHEELSET**

<table>
<thead>
<tr>
<th>FRONT WHEEL</th>
<th>Alloy, QR hub, 32°, Bontrager Corvair rim</th>
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</thead>
<tbody>
<tr>
<td>E.R.D., mm</td>
<td>542</td>
</tr>
<tr>
<td>Rim strip</td>
<td>Velox 19mm</td>
</tr>
<tr>
<td>FRONT TIRE</td>
<td>Bontrager Jones AC</td>
</tr>
<tr>
<td>E.R.D., mm</td>
<td>542</td>
</tr>
<tr>
<td>Rim strip</td>
<td>Velox 22mm</td>
</tr>
<tr>
<td>REAR WHEEL</td>
<td>Shimano C201 hub, 32°, Btrg Corvair OSB rim</td>
</tr>
<tr>
<td>E.R.D., mm</td>
<td>49/54</td>
</tr>
<tr>
<td>REAR TIRE</td>
<td>Bontrager Jones AC</td>
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<tr>
<td>Tire size</td>
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<td>SPOKES</td>
<td>14G stainless</td>
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<td>Front, mm</td>
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<tr>
<td>Rear, mm</td>
<td>263/265, 3x</td>
</tr>
<tr>
<td>INNER TUBES</td>
<td>Presta valve</td>
</tr>
</tbody>
</table>

**OTHER**

| SEATPOST         | Bontrager Sport  |
| SADDLE           | Bontrager Sport  |
| BRAKES           | Alloy direct pull |
| PEDALS           | Alloy cage w/clips and straps               |
| SEAT BINDER      | Alloy w/integral QR                         |
| ADDITIONALS      | 2 water bottle mounts (1 on XS)             |

**COLORS**

Trek Red/Starry Night • White/Silver decals • Black fork  
Dusk • Black/Silver decals • Black fork

**Key features:**

**Rider:** Every day enthusiast or aggressive newbie

**Frameset**

- Alpha SLR butted aluminum - light, strong, and stiff  
- Pro geometry - Race proven

**Wheelset**

- Bontrager Corvair/OSB rims - low weight, smooth braking action  
- Bontrager Jones AC - all-round tread

**Components**

- All-round level (LX and Deore)-all round performance with 9 speed and powerful brakes
For 2002
Alpha ATB hardtail frames, both standard and WSD, remain unchanged from 2000.

Geometry
The regular Alpha ATB uses classic ‘NORBA’ geometry, which has its roots in racing. The Alpha ATB WSD uses our proven WSD geometry.

Ride
These are bikes capable of racing, but with nimble handling that makes them ideal for all-round riding and fun single-track.

The Alpha ATB’s frame offers outstanding pedaling efficiency. This exceptional frame rigidity also gives the Alpha ATB its ‘riding on rails’ cornering ability. You may notice this description shares many of the superlatives of our Alpha SLR ATB frames. The similarity should be no surprise, since the Alpha frames share the SLR heritage and are designed by the same engineering staff.

Frame details
The Alpha ATB uses Alpha aluminum frame technology. An oversize 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.

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

The fittings, like dropouts, on the Alpha ATB are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

Alpha ATB bikes have 2 water bottle mounts, except the XS WSD. This frame size does not have a tall enough seat tube to allow a water bottle mount to be used.

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

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>MILLIMETERS</th>
<th>INCHES</th>
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<tbody>
<tr>
<td>Head angle</td>
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<td>70.5 71.0 71.0 71.0 71.0 71.0 70.5</td>
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<td>Seat angle</td>
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<tr>
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<tbody>
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<tr>
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<td>Eff top tube</td>
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### GEARING

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### BIKE WEIGHT

- 28.1 lb (12.76 kg)

### WHEELSET

<table>
<thead>
<tr>
<th>FRONT WHEEL</th>
<th>Alloy, QR hub, 32°, Bontrager Corvair rim</th>
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<tbody>
<tr>
<td>E.R.D., mm</td>
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</tr>
<tr>
<td>Rim strip</td>
<td>Velox 19mm</td>
</tr>
<tr>
<td>FRONT TIRE</td>
<td>Bontrager Jones AC</td>
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<tr>
<td>Tire size</td>
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</tr>
<tr>
<td>REAR WHEEL</td>
<td>Shimano C201 hub, 32°, Bontrager Corvair OSB rim</td>
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<tr>
<td>Rim strip</td>
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<td>Tire size</td>
<td>4954</td>
</tr>
<tr>
<td>SPOKES</td>
<td>DT 14G stainless</td>
</tr>
<tr>
<td>FRONT mm</td>
<td>266, 3x</td>
</tr>
<tr>
<td>Rear mm</td>
<td>263/265, 3x</td>
</tr>
</tbody>
</table>

### COLORS

- MetalFlake Yellow • Black/Silver decals • Black fork
- Starry Night • Blue/White decals • Black fork

---

**Key features:**

**Rider:** Casual enthusiast or newbie

**Frameset**

- Alpha aluminum - light, strong, and stiff
- Singletrack geometry- Nimble steering and maneuverability

**Wheelset**

- Bontrager Corvair/OSB rims-low weight, smooth braking action
- Bontrager Jones AC- excellent all-round traction/ control

**Components**

- Sport level (Deore)-Wide bars for control, comfortable position, and powerful brakes

---

**FIT**

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider height</th>
<th>Handlebar</th>
<th>Stem</th>
<th>Crank</th>
<th>Seatpost</th>
<th>Steerer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame</td>
<td>Size</td>
<td>Rider height</td>
<td>Handlebar</td>
<td>Stem</td>
<td>Crank</td>
<td>Seatpost</td>
<td>Steerer</td>
</tr>
</tbody>
</table>
**4900 WSD**

**FRAMESET**
- MAIN TUBES: Alpha aluminum
- STAYS: Alpha aluminum
- FORK: RockShox Judy C, light springs
  - Tulear, mm: 80
  - Axle-crown length, mm: 451
- HEADSET: STR Aheadset
  - Size: 25.4/34.0/30.0
  - Stack height, mm: 25.2

**CONTROLS**
- HANDLEBAR: Bontrager Crowbar Sport
  - Clamp diameter, mm: 25.4
- STEM: Bontrager Sport
  - Steerer clamp height, mm: 41.0
- SHIFT LEVERS: Shimano Alivio RapidFire+
- BRAKE LEVERS: Alloy, direct pull, woman’s reach
- GRIPS: Bontrager Race, dual density

**DRIVETRAIN**
- FT DERAILLEUR: Shimano Alivio
  - Cable routing: Top pull
  - Attachment: Plate style w/34.9mm clamp
- RR DERAILLEUR: Shimano Deore SGS
- CRANKSET: Bontrager Sport 44/32/22
  - Bolt circle, mm: 64/104
- BB: Shimano BB-LP27
  - Shell x axle, mm: 73 x 113, Square
- CHAIN: IG31
  - Chain type: 3/32"
  - Chain length (links): 116
- CASSETTE: SRAM 5.0 11-32, 8spd

**BIKE WEIGHT**
- 27.8 lb.
- 12.62 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

**WHEELSET**
- FRONT WHEEL: Alloy, QR hub, 32°, Bontrager Corvair rim
  - E.R.D., mm: 542
  - Rim strip: Velox 19mm
- FRONT TIRE: Bontrager Jones AC
  - Tire size: 49/54
- REAR WHEEL: Shimano C201 hub, 32°, Bontrager OSB rim
  - E.R.D., mm: 542
  - Rim strip: Velox 22mm
- REAR TIRE: Bontrager Jones AC
  - Tire size: 49/54

**OTHER**
- SEATPOST: Bontrager Sport
  - Outer diameter, mm: 29.2
- SADDLE: Bontrager FS 2000 WSD
- PEDALS: Alloy/alloy cage, clipless adaptable
  - 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 XS, S)

**COLORS**
- Iris • White/Silver decals • White fork

**Key features:**

**Rider:** Casual woman enthusiast or newbie

**Frameset**
- Alpha aluminum - light, strong, and stiff
- WSD geometry- Fit and performance for her

**Wheelset**
- Bontrager Corvair/OSB rims-low weight, smooth braking action
- Bontrager Jones AC- excellent all-round traction/control

**Components**
- Sport level (Deore)-Wide bars for control, comfortable position, and powerful brakes
- WSD forks, handlebars, grips, saddle, and cranks to fit and function for a woman
### GEARING

| 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  |

### BIKE WEIGHT

29.2 lb.
13.26 kg.

### FIT

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>13</th>
<th>16.5</th>
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<td>206</td>
<td>226</td>
<td>246</td>
<td>286</td>
<td>325</td>
</tr>
</tbody>
</table>

### Key features:

**Rider:** Casual enthusiast or newbie

**Frameset**
- Alpha aluminum - light, strong, and stiff
- Extra large 24” frame available
- Singletrack geometry- Nimble steering and maneuverability

**Wheelset**
- Alloy rims and quick release hubs- light, easy to operate
- Bontrager Jones AC tires- all-round treads

**Components**
- Recreation level (Alivio)-Wide bars for control, comfortable position, and powerful brakes

**Bike Weight**
- 29.2 lb.
- 13.26 kg.

---

2002 Trek Technical Manual
4300

FRAMESET

MAIN TUBES ... Alpha aluminum
STAYS ... Alpha aluminum

FORK ... RST Capa CL

HEADSET ... Steel

CONTROLS

HANDLEBAR ... Steel, 30mm rise
STEM ... Alloy quick change, direct connect
SHIFT LEVERS ... Shimano EF29
BRAKE LEVERS ... Integrated br/ke/shift

DRIVETRAIN

FT Derailluer ... Shimano CS50
RR Derailluer ... Shimano Acera-X
CRANKSET ... FCM55, alloy, 42/34/24
BB ... Cartridge
CHAIN ... KMC Z-72
CASSETTE ... SRAM 5.0 11-32, 8spd

WHEELSET

FRONT WHEEL ... Alloy, QR hub, 36°, Matrix 550 rim
REAR WHEEL ... Shimano RM-40 hub, 36°, Matrix 550 rim

CONTROLS

FIT

Bike Weight

Rider: Casual double tracker or newbie

Frameset
- Alpha aluminum - light, strong, and stiff
- Singletrack geometry- Nimble steering and maneuverability

Wheelset
- Alloy rims and quick release hubs - lightweight, easy to operate
- Connection tires- smooth and fast on pavement, wide for casual off-road riding

Components
- Recreation level (Acera)- wide performance range, comfortable position, and powerful brakes

Key features:

4300 Disc

WHEELSET

FRONT WHEEL ... Alloy, disc comp., QR hub, 36°, Matrix 550 rim
REAR WHEEL ... Alloy, disc comp., QR hub, 36°, Matrix 550 rim

OTHER

BRAKES ... Hayes disc, mechanical

BIKE WEIGHT

29.2 lb.
13.26 kg.
For 2002

Our steel frame geometry remain unchanged from 2001.

Geometry

These bikes have angles and top tube lengths that put a rider in a more upright position. The angles have been adjusted to make the bike stable with the more recreational weight distribution (as opposed to the forward, aggressive position of racing bikes).

Ride

Although our steel mountain bikes are more upright than our racing bikes, it's a subtle difference. These are not cruisers or hybrids, but simply more comfortable mountain bikes. The more upright position allows a stable ride, and easier balance for the more casual rider. Extremely technical terrain may be more of a challenge, but this bike wasn't designed for the rider who spends the majority of their time attacking Moab slickrock or slippery Mt. Snow singletrack roots. By contrast, these bikes make cruising dirt roads and doubletrack fun and easy.

Frame details

The advantage of Cro-Moly steel is higher tensile strength and fatigue resistance; it's no more rigid than good hi-tensile steel. For this reason, we've only used Cro-Moly in the seat tube, which can see lots of flexing as the seatpost quick release is used. For the rest of the bike, we've focused on providing the best ride for the cost. By carefully designing the frame geometry, tubing wall thicknesses, and tubing diameters, we've managed to create a frame that rides like those costing much more. This allows riders a viable high quality alternative to chain store bikes which don't ride nearly as well.

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

The rear dropouts on these frames are forged steel. Forging provides the highest structural integrity, which is very important for keeping the dropouts in alignment with the rest of the frame. If they are not in alignment, premature wear of hub bearings may result, along with imprecise shifting of the rear derailleur.

Although designed for casual riding, we see folks riding these bikes on long dirt rides, and even road centuries. To keep you hydrated and happy, our steel bikes have 2 water bottle mounts, except the 13, 16.5", and Ladies frames. These frames size do not have enough seat tube to allow a water bottle mount to be used.
### GEARING

<table>
<thead>
<tr>
<th>820</th>
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<th>38</th>
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<td>30</td>
<td>24</td>
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<td>42</td>
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</table>

### BIKE WEIGHT

- **820**: 31.7 lb. (14.39 kg.)

### KEY FEATURES:

**Rider:** Casual double tracker or newbie

**Frameset:**
- Steel- strong and durable
- Singletrack geometry- Nimble steering and maneuverability

**Wheelset:**
- Alloy rims and quick release hubs- light, easy to operate
- Center ridge tires- smooth and fast on pavement, wide for casual off-road riding

**Components:**
- Recreation level (Acera)- wide performance range, comfortable position, and powerful brakes

---

### FIT

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>13</th>
<th>16.5</th>
<th>18</th>
<th>19.5</th>
<th>21</th>
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<th>17W</th>
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<td>69</td>
<td>70</td>
<td>73</td>
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<tr>
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<td>600</td>
<td>600</td>
<td>600</td>
<td>580</td>
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</tr>
<tr>
<td>Stem Length, mm</td>
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<td>90</td>
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<td>Crank Length, mm</td>
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</tr>
<tr>
<td>Steerer Length, mm</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>205</td>
<td>245</td>
<td>285</td>
<td>205</td>
<td></td>
</tr>
</tbody>
</table>
800 Sport

FRAMESET
MAIN TUBES ....... Hi Tensile steel w/CroMoly seat tube
STAYS .............. Hi Tensile steel

FORK ............... High tensile steel
Frame weight 6.0 lb (2.75 kg)

HEADSET ........... Sealed
Size 25.4/34.0/30.0
Stack height, mm 23.0

CONTROLS
HANDLEBAR ....... Steel
Clamp diameter, mm 25.4

STEM ............... Steel ATB
Stem clamp height, mm 41.0

SHIFT LEVERS ...... SRAM MRX Plus

BRAKE LEVERS ...... Alloy, direct pull

GRIPS ............... Kraton

DRIVETRAIN
FT DERAILLEUR .... Shimano COS1
Cable routing Top pull
Attachment 31.8 mm/1 1/4"

RR DERAILLEUR .... Shimano Altus GS
CRANKSET .......... FCM35, alloy, 48/38/28
Bolt hole circle, mm 64/104

BB ................. Semi-cartridge
Shell x axle, mm 68 x 124.5, Square

CHAIN .............. KMC Z-51
Chain type 3/32"
Chain length (links) 110

CASSETTE .......... Sun Race 13-30, 7spd

WHEELSET
FRONT WHEEL ...... Alloy, QR hub, 36°, Matrix 550 rim
E.R.D., mm 559
Rim strip Cloth
FRONT TIRE ........ Bontrager Connection
Tire size 26 x 1.95

REAR WHEEL ...... Alloy, QR hub, 36°, Matrix 550 rim
E.R.D., mm 559
Rim strip Rubber

REAR TIRE ........ Bontrager Connection
Tire size 26 x 1.95

SPokes ............. 14G stainless
Front, mm 264.5, 3x
Rear, mm 264.5, 3x

INNER TUBES ........ Schraeder valve

OTHER
SEATPOST ........... Alloy micro-adjust
Outer diameter, mm 29.2

SADDLE .............. Trek ATB Comfort

BRAKES ............. Alloy direct pull

PEDALS .............. Platform
Axle diameter 9/16" x 1/2"

SEAT BINDER ........ Bolt, M6 x 50
Inner diameter, mm 31.9

ADDITIONALS ....... 2 water bottle mounts (1 bottle on 13, 17W, 20W), rack mounts (no rack on 13"

COLORS
Pearl White/Candy Red • Red/Black decals • Candy Red fork
Frost/Niagra Blue • Blue/Black decals • Niagra Blue fork
Starry Night • Blue/White decals • Starry Night fork

BIKE WEIGHT
31.7 lb.
14.39 kg.

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

FIT
Frame Size 13 16.5 18 19.5 21 22.5 13W 17W 20W
Rider height Inches 65 67 69 70 73 74 67 69 70
Cm 166 169 175 178 185 188 169 176 179
Handlebar Width, mm 580 580 600 600 600 600 580 580 600
Stem Length, mm 90 90 110 110 130 130 105 120 120
Crank Length, mm 170 170 170 175 175 175 170 170 175
Seatpost Length, mm 300 300 350 350 350 350 300 300 350
Steerer Length, mm 190 190 190 205 245 285 190 205 245

Key features:
Rider: Casual double tracker or newbie
Frameset
Steel - strong, and durable
All-round geometry - Stable and forgiving
Wheelset
Alloy rims and quick release hubs - light, easy to operate
Center ridge tires - smooth and fast on pavement, wide for casual off-road riding
Components
Recreation level (Acera) - wide performance range, comfortable position, and powerful brakes
For 2002
No change has been made to this frame platform since its introduction in 2001.

Geometry
The Bruiser frame design is ideal for quick action and fast maneuvering. It’s nimble for slalom racing or dodging urban obstacles. It’s balanced for airmanship in either environment.

Ride
The Bruiser has the frame strength and rigidity necessary for thrash riding. Think of this as a multi-speed BMX bike for adults.

Frame details
The Bruiser uses Alpha aluminum frame technology, but with an emphasis on strength instead of low weight. An ultra-beefy, oversize 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 gusset under the head tube.

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

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

| Frame sizes | 14.5 | 16.0 |
| Head angle  | 70.0 | 71.0 |
| Seat angle  | 70.0 | 71.0 |
| Standover   | 700  | 716  |
| Seat tube   | 368  | 406  |
| Head tube   | 112  | 112  |
| Eff top tube| 570  | 592  |
| Chaintays   | 420  | 420  |
| BB height   | 323  | 323  |
| Offset      | 40.0 | 40.0 |
| Trail       | 80   | 80   |
| Wheelbase   | 1032 | 1054 |

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<tr>
<th>INCHES</th>
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<tbody>
<tr>
<td>Standover</td>
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<tr>
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<tr>
<td>Offset</td>
</tr>
<tr>
<td>Trail</td>
</tr>
<tr>
<td>Wheelbase</td>
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</table>
### Bruiser Two

#### FRAMESET

**MAIN TUBES** ....... Alpha aluminum  
**STAYS** ............... Alpha aluminum  

Frame weight 4.2 lb (1.91 kg)

**FORK** ............... Marzocchi Dirt Jumper 2  

Tire size 26 x 2.35

**HEADSET** .......... STR Aheadset  

Size 25.4/34.0/30.0  

Stack height, mm 23.2

#### CONTROLS

**HANDLEBAR** ....... Alloy w/crossbar  

Clamp diameter, mm 25.4

**STEM** ............... Alloy Ahead type  

Steerer clamp height, mm 41.0

**SHIFT LEVERS** ...... Shimano Alivio RapidFire+  
**BRAKE LEVERS** ...... Alloy, direct pull

**GRIPS** ............... Bontrager Race, dual density

#### DRIVETRAIN

**FT DERAILLEUR** .... Shimano Alivio  

Cable routing  

Attachment

**RR DERAILLEUR** .... Shimano Deore LX SGS  

**CRANKSET** ......... TruVativ Hussefelt, 32/22T  

Bolt hole circle, mm

**BB** ................. Truvativ  

Shell x axle, mm 73 x 113, Splined, ISIS

**CHAIN** .............. KMC Z-82  

Chain type 3/32*

**CASSETTE** .......... SRAM 5.0 11-32, 8spd

#### WHEELSET

**FRONT WHEEL** ...... Alloy, disc compatible, QR hub, 36°, Al alloy rim  

E.R.D., mm  

Rim strip  

**FRONT TIRE** ........ Kenda Kinetics  

Tire size 26 x 2.35

**REAR WHEEL** ...... Alloy, disc compatible, QR hub, 36°, Al alloy rim  

E.R.D., mm  

Rim strip  

**REAR TIRE** .......... Kenda Kinetics  

Tire size 26 x 2.35

**SPKES** ............... 14G UCP  

Front, mm .36  

Rear, mm .36

**INNER TUBES** ...... Presta valve

#### OTHER

**SEATPOST** .......... Alloy micro-adjust  

Dowel diameter, mm 29.2

**SADDLE** ............. Bontrager FS10

**BRAKES** .............. Avid disc, mechanical  

Rotor diameter 6.3 in.  

Bolt circle diameter 44mm

**PEDALS** .............. Platform  

Axle diameter 9/16"

**SEAT Binder** ......... Alloy w/quick release  

Dowel diameter, mm

**ADDITIONALS** ...... Bash guard on crank

#### COLORS

Raw Smoke• Silver decals• Gloss Black fork

---

**Gearing**

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<tr>
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<td>26</td>
<td>22 32</td>
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<td>32</td>
<td>18 26</td>
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**FIT**

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<tr>
<td>Steerer</td>
<td>Length, mm</td>
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**Key features:**

**Rider:** Slalom racer or park rider  
**Frameset**  
Alpha- strong, and durable  

**Wheelset**  
Heavy duty alloy rims- excellent braking, and super-duty strong  
Knobby tires- extra big for traction, shock absorption

**Components**  
Bruiser group- heavy duty at all points, with beefy Marzocchi suspension fork
**Bruiser One**

**FRAMESET**

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Alpha aluminum</th>
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<tr>
<td>STAYS</td>
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**FORK**

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**HEADSET**

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<tbody>
<tr>
<td>Stack height, mm</td>
<td>23.2</td>
</tr>
</tbody>
</table>

**CONTROLS**

<table>
<thead>
<tr>
<th>HANDLEBAR</th>
<th>Alloy w/crossbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamp diameter, mm</td>
<td>25.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STEM</th>
<th>Alloy Ahead type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steerer clamp height, mm</td>
<td>41.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHIFT LEVERS</th>
<th>Shimano Alivio RapidFire+, right only</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BRAKE LEVERS</th>
<th>Alloy, direct pull</th>
</tr>
</thead>
</table>

**GRIPS**

| Bontrager Race, dual density |

**DRIVETRAIN**

<table>
<thead>
<tr>
<th>RR DERRAILLEUR</th>
<th>Shimano Alivio</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRANKSET</td>
<td>TruVativ Firex, 38T</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BB</th>
<th>Truvativ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell x axle, mm</td>
<td>73 x 113, Splined, ISIS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAIN</th>
<th>KMC Z-82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain type</td>
<td>3/32&quot;</td>
</tr>
</tbody>
</table>

| CASSETTE          | Sun Race 12-32, 8spd            |

**WHEELSET**

<table>
<thead>
<tr>
<th>FRONT WHEEL</th>
<th>Alloy, QR hub, 36°, Aluminum alloy rim</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.R.D., mm</td>
<td>Rubber</td>
</tr>
</tbody>
</table>

**FRONT TIRE**

| Size               | 26 x 2.35 |

<table>
<thead>
<tr>
<th>REAR WHEEL</th>
<th>Alloy, QR hub, 36°, Aluminum alloy rim</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.R.D., mm</td>
<td>Rubber</td>
</tr>
</tbody>
</table>

**REAR TIRE**

| Size               | 26 x 2.35 |

**SPOKES**

<table>
<thead>
<tr>
<th>14G UCP</th>
<th></th>
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</thead>
</table>

| INNER TUBES        | Presta valve          |

**OTHER**

<table>
<thead>
<tr>
<th>SEATPOST</th>
<th>Alloy micro-adjust</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SADDLE</th>
<th>Bontrager FS10</th>
</tr>
</thead>
</table>

| BRAKES             | Alloy direct pull     |

<table>
<thead>
<tr>
<th>PEDALS</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axle diameter, mm</td>
<td>9/16&quot;</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SEAT BINDER</th>
<th>Alloy w/quick release</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner diameter, mm</td>
<td>9/16&quot;</td>
</tr>
</tbody>
</table>

| ADDITIONALS        | Chain tensioner       |

**COLORS**

| Raw Steel• Silver decals• Gloss Black fork |

---

**Gearing**

<table>
<thead>
<tr>
<th>38</th>
</tr>
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<tbody>
<tr>
<td>12</td>
</tr>
<tr>
<td>14</td>
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<tr>
<td>16</td>
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<td>18</td>
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<td>121</td>
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<td>24</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>32</td>
</tr>
</tbody>
</table>

---

**FIT**

<table>
<thead>
<tr>
<th>Frame</th>
<th>Handlebar Width, mm</th>
<th>Stem Length, mm</th>
<th>Crank Length, mm</th>
<th>Seatpost Length, mm</th>
<th>Steerer Length, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>680</td>
<td>50</td>
<td>175</td>
<td>400</td>
<td>183</td>
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<tr>
<td>16</td>
<td>680</td>
<td>50</td>
<td>175</td>
<td>400</td>
<td>183</td>
</tr>
</tbody>
</table>

---

**Key features:**

**Rider:** Slalom racer or park rider

**Frameset**

Alpha- strong, and durable

**Wheelset**

Heavy duty alloy rims- excellent braking, and super-duty strong

Knobby tires- extra big for traction, shock absorption

**Components**

Bruiser group- heavy duty at all points
For 2002
Navigator frames remain unchanged from 2000.

Geometry
The Navigator is designed with geometry which puts you in a full 'heads up' position. The dimensions may 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 Navigator's first feature is comfort. Some aficionados will point out that an upright position is not aero, and is therefore inefficient. We'll point out that aerodynamics only really become important above 20 MPH. Or that if you are off the bike because your back hurts, aerodynamic efficiency isn't worth much, regardless. Furthermore, the Navigator rider is not trying to beat the clock, they just want to have fun.

Riding a Navigator, you will enjoy these bikes for 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 Navigator uses Alpha aluminum frame technology.

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

Navigator bikes have 2 water bottle mounts, except the 14.5 and Ladies frames. These frame sizes do not have enough seat tube to allow a water bottle mount to be used.

Fit Information Reminder
When considering the "Rider Height" portion of the Fit information on each page, bear in mind that we made these fit estimations with the stem at its highest point. With Ahead stems, that means all the spacers were under the stem. With quill stems, the handlebars reach their maximum height with the stem pulled up to the minimum insertion line. With adjustable stems, it's calculated with the stem at a 40 degree angle. Lowering the bars, or changing the parts, or changing the stem angle, changes the fit of the bike as well as its Rider Height. Primarily, if you lower the stem, the bike will fit a smaller person. If you make the stem more upright, it will also make the bike fit a smaller person.
**Navigator 600**

### FRAMESET
- **Main tubes**: Alpha aluminum
- **Stays**: Alpha aluminum
- **Fork**: In Sync 178
  - **Travel**: 50
  - **Axle-crown length**: 427
- **Headset**: Sealed
  - **Size**: 25.4/34.0/36.0
  - **Stack height**: 34.5

### CONTROLS
- **Handlebar**: SRAM Smartbar
  - **Clamp diameter**: 25.4
- **Stem**: SRAM Smartbar
  - **Stem clamp height**: 25.4
- **Shift levers**: SRAM Smartbar
- **Brake levers**: SRAM Smartbar
- **Grips**: SRAM Smartbar

### DRIVETRAIN
- **Fr derailleur**: Shimano T301
  - **Cable routing**: Top pull
  - **Attachment**: 34.9 mm/1 3/8" Riveted
- **Rr derailleur**: Shimano ESP 7.0
- **Crankset**: Shimano T301 48/38/28, w/china guard
  - **Bolt hole circle**: Riveted
- **BB**: Cartridge
  - **Shell x axle**: 73 x 124.5, Square
- **Chain**: IG-31
  - **Chain type**: 3/32" 1/16
- **Cassette**: SRAM 5.0 11-32, 8spd

### WHEELSET
- **Front wheel**: Alloy, QR hub, 32°, Bontrager Corvair rim
  - **E.R.D.**: 559
  - **Rim strip**: Rubber
- **Front tire**: Bontrager Comfort w/Kevlar belt
  - **Tire size**: 26 x 1.95
- **Rear wheel**: Shimano Alivio hub, 32°, Btrg Corvair rim
  - **E.R.D.**: 559
  - **Rim strip**: Rubber
- **Rear tire**: Bontrager Comfort w/Kevlar belt
  - **Tire size**: 26 x 1.95
- **Spokes**: 14G stainless
  - **Front**: 264, 3x
  - **Rear**: 261/262, 3x
- **Inner tubes**: Schraeder valve w/Slime sealant

### OTHER
- **Seatpost**: Shock absorber
  - **Outer diameter**: 27.2
- **Saddle**: Oasis Webspring w/ rear flasher
- **Brakes**: Shimano M420, V type
- **Pedals**: Platform
  - **Axle diameter**: 9/16" 36.4
- **Seat Binder**: Alloy w/integral QR
  - **Inner diameter**: 36.4
- **Additionals**: 2 water bottle mounts, rack mounts (1 bottle, no rack on S), kickstand

### COLORS
- Starry Night/Warm Silver • Blue/Silver decals • Black fork

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

### BIKE WEIGHT
- 30.8 lb.
- 13.98 kg.

### FIT
<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>14.5</th>
<th>16.5</th>
<th>18.5</th>
<th>21</th>
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</thead>
<tbody>
<tr>
<td>Rider height</td>
<td>Inches</td>
<td>67</td>
<td>72</td>
<td>74</td>
<td>77</td>
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<tr>
<td>Handlebar Width, mm</td>
<td>580</td>
<td>580</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Stem Length, mm</td>
<td>90</td>
<td>110</td>
<td>110</td>
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<td></td>
</tr>
<tr>
<td>Crank Length, mm</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Seatpost Length, mm</td>
<td>170</td>
<td>170</td>
<td>175</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Steerer Length, mm</td>
<td>163</td>
<td>183</td>
<td>223</td>
<td>263</td>
<td></td>
</tr>
</tbody>
</table>
Navigator 500

FRAMESET
MAIN TUBES ....... Alpha aluminum
STAYS ............ Alpha aluminum
FORK ............. In Sync 178

HEADSET ......... Sealed
Travel, mm 50
Axle-crown length, mm 427

CONTROLS
HANDLEBAR ....... Alloy
Clamp diameter, mm 25.4

STEM ............. Alloy adjustable rise
Stem clamp height, mm
SHIFT LEVERS ...... Shimano Alivio RapidFire+
BRAKE LEVERS ...... SRAM alloy, direct pull
GRIPS ............ Oasis, dual density

DRIVETRAIN
FT DERAILLEUR .... Shimano T301
Cable routing Top pull
Attachment 34.9 mm/1 3/4"
RR DERAILLEUR .... Shimano Deore SGS
CRANKSET ......... Shimano T301 48/38/28, w/chainguard
Bolt hole circle, mm Riveted
BB ............... Cartridge
Shell x axle, mm 73 x 124.5, Square
CHAIN ............ IG-31
Chain type 3/32"
Chain length (links) 114
CASSETTE .......... SRAM 5.0 11-32, 8spd

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

BIKE WEIGHT
30.8 lb.
13.98 kg.

WHEELSET
FRONT WHEEL ....... Alloy, QR hub, 32º, Bontrager Corvair rim
E.R.D., mm 559
Rim strip Rubber
FRONT TIRE ....... Bontrager Comfort w/Kevlar belt
Tire size 26 x 1.95
REAR WHEEL ....... Shimano Alivio hub, 32º, Btrg Corvair rim
E.R.D., mm 559
Rim strip Rubber
REAR TIRE ....... Bontrager Comfort w/Kevlar belt
Tire size 26 x 1.95
SPOKES ............ 14G stainless
Front, mm 264, 3x
Rear, mm 261/262, 3x
INNER TUBES ....... Schrader valve w/Slime sealant

OTHER
SEATPOST ......... Shock absorber
Outer diameter, mm 27.2
SADDLE ............ Oasis Webspring w/ rear flasher
BRAKES ............. Alloy direct pull
PEDALS ............. Platform
Axle diameter 9/16"
SEAT BINDER ......... Alloy w/integral QR
Inner diameter, mm 30.4
ADDITIONALS ....... 2 water bottle mounts, rack mounts (1 bottle, no rack on 14.5 and 14.5W), kickstand

COLORS
Georgia Blue/Pearl Navy • Silver/White decals • Pearl Navy fork

Key features:
Rider: Comfort
Frameset
Alpha- strong, and durable
Special drop design- designed for suspension seatpost and adjustable stem
Wheelset
Bontrager Corvair- seamless braking, durable, and easy to accelerate
Kevlar belts and tube sealant- highly flat resistant
Components
Comfort oriented- suspension seatpost, websping saddle, dual density pedals, comfort grips
Unique controls- Smartbar is futuristic in looks, function
Navigator 400

**FRAMESET**
- MAIN TUBES .......... Alpha aluminum
- STAYS ................. Alpha aluminum
- FORK ................. RST Comp TL
  - Travel, mm: 50
  - Axle-crown length, mm: 457.8

**HEADSET .............** Sealed
- Size: 25.4/34.0/30.0
- Stack height, mm: 34

**CONTROLS**
- HANDLEBAR .......... Steel
  - Clamp diameter, mm: 25.4
- STEM ................. Alloy adjustable rise
  - Steerer clamp height, mm
- SHIFT LEVERS ......... Shimano Revo
- BRAKE LEVERS ......... Alloy, direct pull
- GRIPS ................. Foam

**DRIVETRAIN**
- CRANKSET .......... CPI, 38T, w/chainguard
  - Bolt hole circle, mm: Riveted
- BB ..................... Cartridge
  - Shell x axle, mm: 73 x 110.5, Square
- CHAIN ............... KMC 410
  - Chain type: 1/8"
  - Chain length (links): 98
- CASSETTE .......... Shimano 20T

**BIKE WEIGHT**
- 30.8 lb.
- 13.98 kg.

**GEARING**
- 38
- 91
- 83
- 20
- 71
- 62
- 55
- 47
- 36

**WHEELSET**
- FRONT WHEEL .......... Alloy, QR hub, 36°, Matrix 750 rim
  - E.R.D.: 573
  - Rim: PVC
- FRONT TIRE .......... Bontrager Comfort
  - Tire size: 26 x 1.95
- REAR WHEEL .......... Shimano Nexus, 7spd hub, 36°, Matrix 750 rim
  - E.R.D.: 573
  - Rim: Rubber
- REAR TIRE .......... Bontrager Comfort
  - Tire size: 26 x 1.95
- SPOKES ............... 14G stainless
  - Front, mm: 261, 3x
  - Rear, mm: 250, 252, 3x
- INNER TUBES .......... Schraeder valve

**OTHER**
- SEATPOST ........... Shock absorber
  - Outer diameter, mm: 27.2
- SADDLE ............... Oasis WebSpring
- BRAKES ............... Alloy direct pull w/modulator
- PEDALS ............... Platform
  - Axle diameter: 9/16"
- SEAT BINDER .......... Alloy w/integral QR
  - Inner diameter, mm: 31.8
- ADDITIONALS .......... 2 water bottle mounts, rack mounts (1 bottle, no rack on S), kickstand

**COLORS**
- Platinum/Rain Forest • Black/Silver decals • Black fork

**Key features:**

**Rider: Comfort**
- Frameset
  - Alpha- strong, and durable
  - Special drop design- designed for suspension seatpost and adjustable stem

**Wheelset**
- Bontrager Corvair- seamless braking, durable, and easy to accelerate

**Components**
- Suspension seatpost, webspring saddle, dual density pedals, riser bars, adjustable rise stem, comfort grips- Comfort oriented
- Chainguard, brake modulator- user friendly
**Navigator 300**

**FRAMESET**

- MAIN TUBES ........ Alpha aluminum
- STAYS ............. Alpha aluminum
- FORK ............... RST Comp TL
  - Travel, mm .................. 50
  - Axle-crown length, mm ...... 457.8
- HEADSET .......... Sealed
  - Size ...................... 25.4/34.0/30.0
  - Stack height, mm .......... 34

**CONTROLS**

- HANDLEBAR ........ Steel
  - Clamp diameter, mm ........ 25.4
- STEM ................. Alloy adjustable rise
  - Steerer clamp height, mm 73
- SHIFT LEVERS ...... SRAM MRX Plus
- BRAKE LEVERS ...... Alloy, direct pull
- GRIPS ............... Kraton

**DRIVETRAIN**

- FT DERAILLEUR .... Shimano Nexave 301
  - Cable routing Top pull
  - Attachment 34.9 mm/1 3/8"
- RR DERAILLEUR .... Shimano Deore SGS
- CRANKSET .......... Shimano C203 48/38/28, w/chainguard
  - Bolt hole circle, mm ...... Riveted
- BB .................. Cartridge
  - Shell x axle, mm .......... 73 x 116, Square
- CHAIN ............... KMC Z-72
  - Chain type ............... 3/32"
  - Chain length (links) ...... 114
- CASSETTE .......... SRAM 5.0 11-32, 8spd

**GEARING**

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

**BIKE WEIGHT**

- 30.8 lb.
- 13.98 kg.

**WHEELSET**

- FRONT WHEEL ....... Alloy, QR hub, 36°, Matrix 750 rim
  - E.R.D., mm ............... 573
  - Rim strip ................. PVC
- FRONT TIRE ........ Bontrager Comfort
  - Tire size .......... 26 x 1.95
- REAR WHEEL .......... Shimano RM-40 hub, 36°, Matrix 750 rim
  - E.R.D., mm ............... 573
  - Rim strip ................. Rubber
- REAR TIRE ........ Bontrager Comfort
  - Tire size .......... 26 x 1.95
- SPOKES ............. 14G stainless
  - Front, mm ............... 261, 3x
  - Rear, mm ............... 260/258, 3x
- INNER TUBES ........ Schraeder valve

**OTHER**

- SEATPOST .......... Shock absorber
  - Outer diameter, mm ...... 27.2
- SADDLE .......... Oasis Webspring
- BRAKES .......... Alloy direct pull w/modulator
- PEDALS .......... Platform
  - Axle diameter .......... 9/16"
- SEAT BINDER .......... Alloy w/integral QR
  - Inner diameter, mm ...... 30.0
- ADDITIONALS ........ 2 water bottle mounts, rack mounts (1 bottle, no rack on S), kickstand

**COLORS**

- Glacier • Black/Silver decals • Black fork
- Spanish Gold/Starry Night • Silver/Dark Silver decals • Starry Night fork

**Key features:**

**Rider: Comfort**

- Frameset
  - Alpha- strong, and durable
  - Special drop design- designed for suspension seatpost and adjustable stem

- Wheelset
  - Alloy rims, quick release hubs- light weight, easy to install wheels make transporting to your favorite area a snap

- Components
  - Suspension seatpost, websping saddle, dual density pedals, riser bars, adjustable rise stem, comfort grips- Comfort oriented
  - Chainguard, brake modulator- user friendly

- Gearing

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

- Bike weight

- 30.8 lb.
- 13.98 kg.
### Navigator 200

**FRAMESET**

| MAIN TUBES | Alpha aluminum |
| STAYS | Alpha aluminum |
| FORK | RST Comp CL |
| | **Travel, mm** 50 |
| | **Axle-crown length, mm** 454.9 |

**HEADSET**

| **Sealed** |
| **Size** 25.4/34.0/30.0 |
| **Stack height, mm** 34 |

**FIT**

<table>
<thead>
<tr>
<th>Frame Size</th>
<th>14.5</th>
<th>16.5</th>
<th>18.5</th>
<th>21</th>
<th>14.5W</th>
<th>16.5W</th>
<th>18.5W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rider height, Inches</td>
<td>68</td>
<td>73</td>
<td>76</td>
<td>78</td>
<td>68</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td>Handlebar Width, mm</td>
<td>580</td>
<td>580</td>
<td>600</td>
<td>600</td>
<td>580</td>
<td>580</td>
<td>600</td>
</tr>
<tr>
<td>Stem Length, mm</td>
<td>90</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>90</td>
<td>110</td>
<td>110</td>
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<tr>
<td>Crank Length, mm</td>
<td>170</td>
<td>170</td>
<td>175</td>
<td>175</td>
<td>170</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>Seatpost Length, mm</td>
<td>300</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>300</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Steerer Length, mm</td>
<td>162</td>
<td>182</td>
<td>222</td>
<td>262</td>
<td>162</td>
<td>202</td>
<td>222</td>
</tr>
</tbody>
</table>

**WHEELSET**

- **FRONT WHEEL**
  - **Material**: Alloy, QR hub, 36°, Matrix 550 rim
  - **E.R.D., mm**: 573
  - **Rim strip**: Rubber
  - **FRONT TIRE**
    - **Width, mm**: 26 x 1.95
    - **Rim strip**: Rubber
  - **REAR WHEEL**
    - **Material**: Alloy, QR hub, 36°, Matrix 550 rim
    - **E.R.D., mm**: 573
    - **Rim strip**: Rubber
  - **REAR TIRE**
    - **Width, mm**: 26 x 1.95
    - **Rim strip**: Rubber

**CONTROL**

- **HANDLEBAR**: Steel
  - **Clamp diameter, mm**: 25.4
- **STEM**: Alloy adjustable rise
  - **Stem clamp height, mm**: 25.4
- **SHIFT LEVERS**: SRAM MRX Plus w/SRAM SDU
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Kraton

**BIKE WEIGHT**

<table>
<thead>
<tr>
<th><strong>Frame Size</strong></th>
<th>14.5</th>
<th>16.5</th>
<th>18.5</th>
<th>21</th>
<th>14.5W</th>
<th>16.5W</th>
<th>18.5W</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rider height, Inches</strong></td>
<td>68</td>
<td>73</td>
<td>76</td>
<td>78</td>
<td>68</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td><strong>Handlebar Width, mm</strong></td>
<td>580</td>
<td>580</td>
<td>600</td>
<td>600</td>
<td>580</td>
<td>580</td>
<td>600</td>
</tr>
<tr>
<td><strong>Stem Length, mm</strong></td>
<td>90</td>
<td>110</td>
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<td><strong>Steerer Length, mm</strong></td>
<td>162</td>
<td>182</td>
<td>222</td>
<td>262</td>
<td>162</td>
<td>202</td>
<td>222</td>
</tr>
</tbody>
</table>

**COLORS**

- Stone Pearl/Platinum • Red/Silver decals • Candy Red fork
- Dusk • Silver/White decals • Custom Silver fork

**Key features:**

**Rider: Comfort**

**Frameset**

- Alpha- strong, and durable
- Special drop design- designed for suspension seat-post and adjustable stem

**Wheelset**

- Alloy rims, quick release hubs- light weight, easy to install wheels make transporting to your favorite area a snap

**Components**

- Suspension seatpost, webspring saddle, riser bars, adjustable rise stem, comfort grips- Comfort oriented
- Dashboard, chainguard, brake modulator- user friendly
### Navigator 100

#### FRAMESET
- **MAIN TUBES**: Hi Tensile steel
- **STAYS**: Hi Tensile steel
- **FORK**: High tensile steel

#### CONTROLS
- **HANDLEBAR**: Steel
  - Clamp diameter, mm: 25.4
- **STEM**: Alloy adjustable rise
  - Steerer clamp height, mm
- **SHIFT LEVERS**: SRAM ESP 4.0
  - SRAM SDU
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Kraton

#### DRIVETRAIN
- **FT DERAILLEUR**: Shimano C051
- **RR DERAILLEUR**: SRAM ESP 4.0
- **CRANKSET**: FCM35, alloy, 48/38/28, w/chainguard
- **BB**: Semi-cartridge
  - Bolt hole circle, mm: Riveted
- **CHAIN**: KMC Z-51
  - Chain type: 3/32"
  - Chain length (links): 114
- **CASSETTE**: Sun Race 13-34, 7 spd

#### BIKE WEIGHT
- 30.8 lb.
- 13.98 kg.

#### WHEELSET
- **FRONT WHEEL**: Alloy, QR hub, 36°, Matrix 550 rim
  - E.R.D., mm: 573
  - Rim strip: Rubber
- **FRONT TIRE**: Bontrager Comfort
  - Tire size: 26 x 1.95
- **REAR WHEEL**: Alloy, QR hub, 36°, Matrix 550 rim
  - E.R.D., mm: 573
  - Rim strip: Rubber
- **REAR TIRE**: Bontrager Comfort
  - Tire size: 26 x 1.95
- **SPOKES**: 14G stainless
  - Front, mm: 264, 3x
  - Rear, mm: 261/263, 3x
- **INNER TUBES**: Schraeder valve

#### OTHER
- **SEATPOST**: Shock absorber
  - Outer diameter, mm: 27.2
- **SADDLE**: Oasis Webspring
- **BRAKES**: Alloy direct pull w/modulator
- **PEDALS**: Platform
  - Axle diameter: 9/16"
- **SEAT BINDER**: Alloy w/integral QR
  - Inner diameter, mm: 30.0
- **ADDITIONALS**: 2 water bottle mounts, rack mounts (1 bottle, no rack on S), kickstand

#### COLORS
- Starry Night/ Warm Silver • Green/Silver decals • Starry Night fork
- Candy Red • Black/Silver decals • Candy Red fork

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

#### FIT
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New for 2002

The 7200 FX and 7500 FX use the same frame as in 2001, our Alpha hybrid frames. The 7700 FX uses a new, faster and more aggressive design for those who want to go faster, farther, and more powerfully. In addition to a more forward position, the 7700 FX also uses an alpha SL frame for reduced weight and increased liveliness.

Geometry

The FX bikes use a hybrid frame, but with a lightweight rigid fork (not on the 7200 FX). This provides a slightly more spirited ride that's fun and maneuverable at higher speeds. Yet it's stable so you don't have to focus solely on the road or its obstacles.

Ride

The FX bikes offer nimble handling that makes them ideal for faster all-round riding or fitness training. We have to give credit for this concept to the cycling public. We were out riding when we saw riders moving fast and light in a comfortable, upright position. We've seen these riders scooting around town for work or a cappuccino, as well as all across the country cranking hard on multi-day tours.

Both the Alpha and Alpha SL frames offer outstanding pedaling efficiency so you can crank up hills and go the distance. The exceptional frame rigidity also gives the FX its 'riding on rails' cornering ability. Just because you like to sit up doesn't mean you can't have fun; the FX is fast and lively.

Frame details

The FX frames use Alpha, Alpha ZX, and Alpha SL aluminum frame technology. With these frames, an oversize 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 fittings, like dropouts, are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

FX bikes have 2 water bottle mounts, except the 15L and 17L. These frame sizes do not have enough seat tube to allow a water bottle mount to be used.

### 7700 FX

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>Head angle</th>
<th>Seat angle</th>
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<tbody>
<tr>
<td>50</td>
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<tr>
<td>56</td>
<td>72.5</td>
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</tbody>
</table>

| Standover   | 763        | 775        | 791        | 805        | 824 |
| Head tube   | 500        | 520        | 540        | 560        | 580 |
| Eff top tube| 97         | 97         | 105        | 105        | 123 |
| Chainstays  | 515        | 525        | 540        | 555        | 565 |
| BB height   | 430        | 430        | 430        | 430        | 430 |
| Offset      | 281        | 281        | 282        | 281        | 283 |
| Trail       | 45.0       | 45.0       | 45.0       | 45.0       | 45.0 |
| Wheelbase   | 74         | 74         | 71         | 68         | 64  |

### 7200 FX, 7500 FX

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>Head angle</th>
<th>Seat angle</th>
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<td>70.5</td>
</tr>
<tr>
<td>20L</td>
<td>70.0</td>
<td>70.5</td>
</tr>
</tbody>
</table>

| Standover   | 690        | 732        | 774        | 822        | 598 |
| Head tube   | 381        | 445        | 508        | 572        | 381 |
| Eff top tube| 90         | 105        | 105        | 105        | 125 |
| Chainstays  | 544        | 548        | 565        | 581        | 543 |
| BB height   | 445        | 445        | 445        | 445        | 445 |
| Offset      | 281        | 281        | 281        | 281        | 281 |
| Trail       | 50.0       | 50.0       | 50.0       | 50.0       | 50.0 |
| Wheelbase   | 74         | 70         | 70         | 64         | 70  |
|              | 1056       | 1056       | 1062       | 1069       | 1056 |

| Standover   | 27.2       | 28.8       | 30.5       | 32.4       | 23.5 |
| Head tube   | 15.0       | 17.5       | 20.0       | 22.5       | 15.0 |
| Eff top tube| 3.5        | 4.1        | 4.1        | 4.9        | 4.1  |
| Chainstays  | 21.4       | 21.6       | 22.2       | 22.9       | 21.4 |
| BB height   | 17.5       | 17.5       | 17.5       | 17.5       | 17.5 |
| Offset      | 11.1       | 11.1       | 11.1       | 11.1       | 11.1 |
| Trail       | 2.9        | 2.8        | 2.8        | 2.5        | 2.9  |
| Wheelbase   | 41.6       | 41.6       | 41.8       | 42.1       | 41.6 |
### 7700 FX

#### FRAMESET

- **Main Tubes**: Alpha SL aluminum
- **Stays**: Alpha SL aluminum
- **Fork**: X-Lite aluminum
- **Headset**: SAS Aheadset, alloy

#### CONTROLS

- **Handlebar**: Bontrager Race
- **Stem**: Bontrager Sport
- **Shift Levers**:
- **Brake Levers**: Avid AD 3L, long pull
- **Grips**: Oasis, dual density

#### Drivetrain

- **FT Derailleur**: Shimano Tiagra T
- **RR Derailleur**: Shimano Tiagra GS
- **Crankset**: Shimano Tiagra 52/42/30
- **BB**: Shimano BB-UN40
- **Chain**: Shimano HG-72
- **Cassette**: Shimano HG50 12-25, 9spd

#### Bike Weight

- 22.5 lb.
- 10.22 kg.

#### Fit

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider height</th>
<th>Handlebar</th>
<th>Stem</th>
<th>Crank</th>
<th>Seatpost</th>
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<tr>
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<td>190.5</td>
<td>198.5</td>
<td>198.5</td>
<td>216.5</td>
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</tbody>
</table>

### Wheelset

- **Front Wheel**: Bontrager Select Hybrid, 20°
- **Front Tire**: IRC Duro Tour
- **Rear Wheel**: Bontrager Select Hybrid, 24°
- **Rear Tire**: IRC Duro Tour
- **Spokes**: DT 14/15G butted stainless
- **Brakes**: Avid AD 3L, long pull
- **Grips**: Oasis, dual density

### Colors

- Platinum Silver/Starry Night • Red/White decals • Platinum fork

---

**Key Features:**

**Rider**: Upright fitness or century rider

**Frameset**:
- Alpha SL butted aluminum- light, strong, and durable
- Hybrid styling- comfortable, upright position

**Wheelset**: Bontrager Paired Spoke Technology- Aero and fast, low maintenance

**Components**:
- Road/mountain mix:
  - Tiagra cranks- high gears like a road bike
- Direct pull brakes and wide bars- excellent control
### 7500 FX

#### FRAMESET
- **MAIN TUBES**: Alpha ZX aluminum
- **STAYS**: Alpha ZX aluminum
- **FORK**: Cro-Moly
- **HEADSET**: STR Aheadset

#### CONTROLS
- **HANDLEBAR**: Bontrager Crowbar Comp
- **STEM**: Bontrager Sport
- **SHIFT LEVERS**: Shimano Alivio RapidFire+
- **BRAKE LEVERS**: Alloy, direct pull

#### DRIVETRAIN
- **FT DERRAILLEUR**: Shimano Nexave 301
- **RR DERRAILLEUR**: Shimano Deore SGS
- **CRANKSET**: Shimano Nexave 401 48/38/28
- **BB**: Shimano BB-LP27
- **CHAIN**: IG-31
- **CASSETTE**: Shimano HG50-1 11-30, 8spd

#### WHEELSET
- **FRONT WHEEL**: Bontrager Select Hybrid, 20°
  - **E.R.D., mm**: 592
- **FRONT TIRE**: IRC Duro Tour
  - **Tire size**: 700 x 35c
- **REAR WHEEL**: Bontrager Select Hybrid, 24°
  - **E.R.D., mm**: 609
- **REAR TIRE**: IRC Duro Tour
  - **Tire size**: 700 x 35c

#### BIKE WEIGHT
- **25.4 lb.**
- **11.53 kg.**

### GEARING
<table>
<thead>
<tr>
<th>28</th>
<th>38</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
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<td>13</td>
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### FIT
<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider height</th>
<th>Size</th>
<th>Handlebar</th>
<th>Width, mm</th>
<th>Stem</th>
<th>Length, mm</th>
<th>Angle</th>
<th>Crank</th>
<th>Length, mm</th>
<th>Seatpost</th>
<th>Length, mm</th>
<th>Steerer</th>
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</table>

### Key features:
- **Rider**: Upright fitness or century rider
- **Frameset**: Alpha ZX aluminum- light, strong, and durable
  - Hybrid styling- comfortable, upright position
- **Wheelset**: Bontrager Paired Spoke Technology- Aero and fast, low maintenance
  - Duro-Tour tires- fast, tough, shock absorptive
- **Components**: Road/mountain mix:
  - Nexave cranks- wide range gears with high gears like a road bike
  - Direct pull brakes and wide bars- excellent control
- **Colors**: Dusk/Bright Silver • Black/White decals • Dusk fork
### 7200 FX

#### FRAMESET

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Alpha aluminum</th>
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<tbody>
<tr>
<td>STAYS</td>
<td>Alpha aluminum</td>
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<td>FORK</td>
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<tr>
<td>Travel, mm</td>
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<tr>
<td>Axle-crown length, mm</td>
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<tr>
<td>HEADSET</td>
<td>Sealed</td>
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<td>Size</td>
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#### CONTROLS

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<tr>
<td>STEM</td>
<td>Alloy quick change, adj. rise, direct connect</td>
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<tr>
<td>Steering clamp height, mm</td>
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<tr>
<td>SHIFT LEVERS</td>
<td>Shimano EF29</td>
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<tr>
<td>BRAKE LEVERS</td>
<td>Alloy, direct pull</td>
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<td>GRIPS</td>
<td>Oasis, dual density</td>
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#### DRIVETRAIN

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<th>FT DERAILLEUR</th>
<th>Shimano CS51</th>
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<tr>
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#### BIKE WEIGHT

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<tr>
<td>Kilograms</td>
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#### GEARING

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#### WHEELSET

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<tr>
<th>FRONT WHEEL</th>
<th>Alloy, OR hub, 32°, Matrix 750 rim</th>
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<tbody>
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<td>FRONT TIRE</td>
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<td>Tire size</td>
<td>700 x 38c</td>
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<tr>
<td>REAR WHEEL</td>
<td>Shimano RM-40 hub, 32°, Matrix 750 rim</td>
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<tr>
<td>E.R.D., mm</td>
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<tr>
<td>Rim strip</td>
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<td>COLORS</td>
<td>Platinum Silver/Candy Red • Black/White decals • Candy Red fork</td>
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#### Key features:

**Rider: Upright fitness or century rider**

**Frameset**
- Alpha aluminum- light, strong, and durable
- Hybrid styling- comfortable, upright position

**Wheelset**
- Matrix 750 rims- seamless braking, light acceleration
- Bontrager Select tires- fast, tough, shock absorptive

**Components**
- Road/mountain mix:
  - Shimano hybrid cranks- wide range gears with high gears like a road bike
  - Direct pull brakes and wide bars- excellent control

### FIT

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Hybrids

For 2002
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 Alpha frame technology (see page 9). 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 Alpha hybrids are very comfortable and shock absorptive.

Hybrid bikes have 2 water bottle mounts, except the 15L and 17L. These frame sizes do not have enough seat tube to allow a water bottle mount to be used.
### 7700

#### FRAMESET
- **MAIN TUBES** ....... Alpha SL aluminum
- **STAYS** ............... Alpha SL aluminum
- **FORK** ............... RockShox Ruby Metro C
  - Travel, mm: 50
  - Axle-crown length, mm: 456
- **HEADSET** ........... VP STR Aheadset
  - Size: 25.4/34.0/30.0
  - Stack height, mm: 23.0

#### CONTROLS
- **HANDLEBAR** ......... Alloy
  - Clamp diameter, mm: 25.4
- **STEM** ................. Alloy adjustable rise
  - Steerer clamp height, mm: 40.0
- **SHIFT LEVERS** ....... Shimano Deore XT RapidFire SL
- **BRAKE LEVERS** ...... Integrated brake/shift
- **GRIPS** ............... Oasis, dual density

#### DRIVETRAIN
- **FT DERAILLEUR** ...... Shimano Deore XT
  - Cable routing: Top pull
  - Attachment: 34.9 mm/1.38
- **RR DERAILLEUR** ...... Shimano Deore XT SGS
- **CRANKSET** ......... Shimano Deore 48/36/26
  - Bolt hole circle, mm: 64/104
- **BB** .................. Shimano BB-UN40
  - Shell x axle, mm: 68 x 110, Square
- **CHAIN** .............. Shimano HG-72
  - Chain type: 3/32" 114 links
- **CASSETTE** .......... Shimano HG50 11-32, 9spd

#### WHEELSET
- **FRONT WHEEL** ....... Bontrager Select Hybrid, 20°
  - E.R.D., mm: 592
  - Rim strip: Velox 16mm
- **FRONT TIRE** ........ Bontrager Select
  - Tire size: 700 x 38c
- **REAR WHEEL** ......... Bontrager Select Hybrid, 24°
  - E.R.D., mm: 603
  - Rim strip: Velox 16mm
- **REAR TIRE** ........... Bontrager Select
  - Tire size: 700 x 38c
- **SPokes** .............. DT 14/15G butted stainless
  - Front, mm: 278, Radial
  - Rear, mm: 295/294, 2x
- **INNER TUBES** ....... Presta valve

#### OTHER
- **SEATPOST** .......... Suspension
  - Outer diameter, mm: 27.2
- **SADDLE** ............. Oasis Comfort Zone Plus
- **BRAKES** .............. Avid Single Digit 3, linear pull
- **PEDALS** ............. Shimano SPD M324, clipless
  - Axle diameter: 9/16"
- **SEAT BINDER** ....... Alloy w/integral QR
  - Inner diameter, mm: 35.0
- **ADDITIONALS** ...... 2 water bottle mounts (1 on 15), rack mounts (not 15)

#### COLORS
- Georgia Blue/Starry Night • Silver/Black decals • Silver fork

### GEARING

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### BIKE WEIGHT
- 27.5 lb.
- 12.49 kg.

### Key features:

**Rider: Comfort Day Tourer or Commuter**

**Frameset**
- Alpha ZX aluminum- light, strong, and durable
- Hybrid styling- comfortable, upright position

**Wheelset**
- Bontrager Paired Spoke Technology- fast and aero, low maintenance
- Invert II tires- fast, tough, shock absorptive

**Components**
- Road/mountain mix:
  - Nexave cranks- wide range gears with high gears like a road bike
  - Direct pull brakes and wide bars- excellent control
- Suspension fork and seatpost- comfort
- City features: Double chainring with Megarange requires fewer front shifts for same wide range

### FIT

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<tr>
<th>Frame</th>
<th>Size</th>
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Frame 7500

**FRAMESET**
- MAIN TUBES: Alpha SL aluminum
- STAYS: Alpha SL aluminum
- FORK: InSync Odessa 168
- HEADSET: VP STR Aheadset

**GEARING**
- 21x19
- 68 2002 Trek Technical Manual

**FIT**
- Frame
- Rider Height
- Handlebar
- Stem
- Crank
- Seatpost
- Steerer

**BIKE WEIGHT**
- 29.5 lb.
- 13.39 kg.

**WHEELSET**
- FRONT WHEEL: Bontrager Select Hybrid, 20°
- FRONT TIRE: Bontrager Select
- REAR WHEEL: Bontrager Select Hybrid, 24°
- REAR TIRE: Bontrager Select

**CONTROLS**
- HANDLEBAR: Steel, 60mm rise
- STEM: Alloy adjustable rise
- SHIFT LEVERS: Shimano Alivio RapidFire+
- BRAKE LEVERS: Alloy, direct pull
- GRIPS: Oasis, dual density

**DRIVETRAIN**
- FT DERAILLEUR: Shimano Nexave 301
- RR DERAILLEUR: Shimano Deore LX SGS
- CRANKSET: Shimano Nexave 48/38/28
- BB: Shimano BB-LP27
- CHAIN: HG-50
- CASSETTE: SRAM 5.0 11-32, 8spd

**GEAR**
- 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

**COLORS**
- Sand • Black/Dark Silver decals • Black fork
- Slate Pearl • Black/White decals • Black fork

**Key features:**
- **Rider:** Comfort Day Tourer or Commuter
- **Frameset:**
  - Alpha aluminum- light, strong, and durable
  - Hybrid styling- comfortable, upright position
- **Wheelset:**
  - Bontrager Wheelsets- seamless braking, light-weight acceleration
  - Bontrager Select tires- fast, tough, shock absorptive
- **Components:**
  - Suspension fork and seatpost- comfort
  - City features: Easy to use twist shifting, wide ratio gearing with road bike range
## 7300

### FRAMESET

**MAIN TUBES** ........ Alpha aluminum  
**STAYS** ............... Alpha aluminum  
**FORK** ................. Cozy ST  
Frame weight 4.2 lb (1.91 kg)  
**HEADSET** ............ Sealed  
Size 25.4/34.0/30.0  
Stack height, mm 35.9  
**CONTROLS**  
**HANDLEBAR** ......... Steel  
Clamp diameter, mm 25.4  
**STEM** ................. Alloy adjustable rise  
**SHIFT LEVERS** ....... GripShift Centera  
**BRAKE LEVERS** ...... Alloy, direct pull (short reach women’s)  
**GRIPS** ............... Oasis, dual density  
**DRIVETRAIN**  
**FT DERAILLEUR** ..... Shimano Nexave 301  
Cable routing Top pull, (W-down)  
**RR DERAILLEUR** ..... Shimano Deore SGS  
**CRANKSET** .......... Shimano Nexave 301 48/38/28, w/chainguard  
Bolt hole circle, mm Riveted  
**BB** ................... Shimano BB-CS15  
**CHAIN** ............... HG50  
**CASSETTE** ............ SRAM 5.0 11-32, 8spd

### GEARING

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<td>20</td>
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### BIKE WEIGHT

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###Key features:

**Rider:** Comfort Day Tourer or Commuter  
**Frameset**  
Alpha aluminum- light, strong, and durable  
Hybrid styling- comfortable, upright position  
**Wheelset**  
Bontrager Fairlane rims- seamless braking, light-weight acceleration  
Bontrager Select tires- fast, tough, shock absorptive  
**Components**  
Suspension seatpost- comfort  
City features: Easy to use twist shifting, wide ratio gearing with road bike range
## 7200

### FRAMESET

- **MAIN TUBES**: Alpha aluminum  
- **STAYS**: Alpha aluminum  
- **FORK**: Post Moderne Comfy  
- **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**  

### CONTROLS

- **HANDLEBAR**: Steel  
  - **Width, mm**: 580  
  - **Length, mm**: 90  
  - **Angle**: 40  
  - **SEATPOST**: Suspension  
    - **Outer diameter, mm**: 27.2
  
### DRIVETRAIN

- **FT DERAILLEUR**: Shimano C051  
- **RR DERAILLEUR**: Shimano Acera-X  
- **CRANKSET**: Shimano C103 48/38/28, w/chianward  
- **WHEELSET**:
  - **FRONT WHEEL**: Alloy, QR hub, 36°, Matrix 750 rim  
    - **E.R.D., mm**: 634  
    - **Rim strip**: PVC  
  - **REAR WHEEL**: Shimano RM-40 hub, 36°, Matrix 750 rim  
    - **E.R.D., mm**: 634  
    - **Rim strip**: Velox 19mm

### BIKE WEIGHT

- **28.5 lb.**  
- **12.94 kg.**

### GEARING

- **Sun Race 13-34, 7spd**

### FIT

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### FIT KEY FEATURES:

**Rider: Comfort Day Tourer or Commuter**

**Frameset**
- Alpha aluminum- light, strong, and durable  
- Hybrid styling- comfortable, upright position

**Wheelset**
- Bontrager Fairlane rims- seamless braking, light-weight acceleration  
- Invert II tires- fast, tough, shock absorptive

**Components**
- Suspension seatpost- comfort  
- City features: Easy to use twist shifting, wide ratio gearing with road bike range

### COLORS

- Georgia Blue/Pearl Navy • Black/Silver decals • Pearl Navy fork  
- Warm Silver • Red/Black decals • Candy Red fork
# 7100

## FRAMESET
- **MAIN TUBES**......Alpha aluminum
- **STAYS**.........Alpha aluminum
- **FORK**..............High tensile steel
  - Travel, mm: 439.6
  - Axle-crown length, mm: 439.6
- **HEADSET**.......Sealed
  - Size: 25.4/34.0/30.0
  - Stack height, mm: 34.0

## CONTROLS
- **HANDLEBAR**......Steel
  - Clamp diameter, mm: 25.4
- **STEM**............Alloy adjustable rise
  - Stem clamp height, mm
- **SHIFT LEVERS**......SRAM MRX Plus w/SRAM SDU
- **BRAKE LEVERS**......Alloy, direct pull

## DRIVETRAIN
- **FT DERAILLEUR**......Shimano C051
  - Cable routing: Top pull, (W-down)
  - Attachment: 34.9 mm / 1 3/8"
- **RR DERAILLEUR**......Shimano TY-40 GS
- **CRANKSET**.........FCM35, alloy, 48/38/28, w/chainguard
  - Bolt hole circle, mm: Riveted
- **BB**...............Semi-cartridge
  - Shell x axle, mm: 73 x 124.5, Square
- **CHAIN**............KMC Z-51
  - Chain type: 3/32"
  - Chain length (links): 114
- **CASSETTE**.........Sun Race 13-34, 7spd

## WHEELSET
- **FRONT WHEEL**......Alloy, QR hub, 36°, Matrix 550 rim
  - E.R.D., mm: PVC
- **FRONT TIRE**......Bontrager Select
  - Tire size: 700 x 38c
- **REAR WHEEL**......Alloy, QR hub, 36°, Matrix 550 rim
  - E.R.D., mm: PVC
  - Rim strip: Velox 19mm
- **REAR TIRE**......Bontrager Select
  - Tire size: 700 x 38c
- **SPOKES**.........14G stainless
  - Front, mm: 295, 3x
  - Rear, mm: 292/293, 3x

## INNER TUBES
- **STEerer**.........Kraton

## OTHER
- **SEATPOST**.......Suspension
  - Outer diameter, mm: 27.2
- **SADDLE**.........Oasis Webspring
- **BRAKES**.........Alloy direct pull
- **PEDALS**.........Platform
  - Axle diameter: 9/16"
  - Inner diameter, mm: 31.8
- **ADDITIONALS**......2 water bottle mounts, rack mounts (1 bottle on 15L)

## COLORS
- Warm Silver/Rainforest • Black/Gold decals • Warm Silver fork
- Glacier • Black/Silver decals • Glacier fork

## BIKE WEIGHT
- 28.5 lb.
- 12.94 kg.

## GEARING

| 28 | 38 | 48 |
| 13 | 59 | 80 |
| 15 | 51 | 69 |
| 17 | 45 | 77 |
| 19 | 40 | 54 |
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| 26 | 29 | 50 |
| 34 | 22 | 38 |

## FIT

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<td>Length, mm</td>
<td>300</td>
<td>300</td>
<td>350</td>
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<td>Steerer</td>
<td>Length, mm</td>
<td>127</td>
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<td>182</td>
<td>142</td>
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<td>182</td>
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</tbody>
</table>

2002 Trek Technical Manual

71
Cruisers

For 2002
The cruisers share the frames of the 2001 line.

Geometry
The Cruisers are designed with geometry which puts you in a full ‘heads up’ position. These bikes are stable, and easy to get off and on.

Ride
Cruisers are about style, not speed. You sit upright, so you can see your surroundings, and you can be seen. This makes a cruiser great for saying “Howdy” in the neighborhood, or running down to the coffee shop. It should be obvious that they are the perfect bike for cruising the bike path at the beach.

Frame details
The Clyde uses Alpha aluminum frame technology.

The other cruisers use hi-tensile steel with a Cro-Moly seat tube. The advantage of Cro-Moly steel is higher tensile strength and fatigue resistance; it’s no more rigid than good hi-tensile steel. For this reason, we’ve only used Cro-Moly in the seat tube, which can see lots of flexing as the seatpost quick release is used. For the rest of the bike, we’ve focused on providing the best ride for the cost. By carefully designing the frame geometry, tubing wall thicknesses, and tubing diameters, we’ve managed to create a bike that rides like those costing a lot more. This allows riders a viable high quality alternative to chain store bikes which don’t ride nearly as well.

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 Cruisers go through the full Trek testing regimen. Passing this rigorous evaluation means they’re designed and built to last.
**Clyde**

**FRAMESET**
- MAIN TUBES ........... Alpha aluminum
- STAYS ................... Alpha aluminum
- FORK ..................... Cro-Moly
- Axle-crown length, mm 365
- HEADSET ............... Sealed
- Size 22.2/32.5/26.4
- Stack height, mm 27

**CONTROLS**
- HANDLEBAR ............ Bontrager Crowbar Sport
- Clamp diameter, mm 25.4
- STEM ................... Bontrager Sport
- Steerer clamp height, mm 41.0
- SHIFT LEVERS ........... Shimano Revo
- BRAKE LEVERS ......... Alloy, direct pull
- GRIPS .................... Oasis, dual density

**DRIVETRAIN**
- CRANKSET ............ Bontrager, 33T, ww/chainguard
- Bolt hole circle, mm 1 piece
- BB .................... Cartridge
- Shell x axle, mm 68 x 110, Square
- CHAIN ............... KMC 410
- Chain type 1/8"
- Chain length (links) 112
- CASSETTE ............ 20T

**WHEELSET**
- FRONT WHEEL ...... Alloy, nutted hub, 36°, Matrix 750 rim
- E.R.D., mm 559
- Rim strip Rubber
- FRONT TIRE .......... Blackwall
- Tire size 26 x 2.0
- REAR WHEEL ......... Shimano Nexus 4spd hub, 36°, Matrix 750 rim
- E.R.D., mm 559
- Rim strip Rubber
- REAR TIRE .......... Blackwall
- Tire size 26 x 2.0
- SPOKES ............... 14G stainless
- Front, mm 264, 3x
- Rear, mm 260/260, 3x
- INNER TUBES ......... Schraeder valve

**OTHER**
- SEATPOST ............ Bontrager Sport
- Outer diameter, mm 25.6
- SADDLE ............... Bontrager
- BRAKES ............... Alloy direct pull
- PEDALS ............... Platform
- Axle diameter 1/2"
- SEAT BINDER .......... M6 x 55
- Inner diameter, mm
- ADDITIONALS ......... Kickstand, chainguard

**COLORS**
Matte Black • Silver/Dark Silver decals

---

**GEARING**
- 42
- 18
- 61
- 76
- 92
- 112

**BIKE WEIGHT**
- 32.0 lb.
- 14.53 kg.

---

**FIT**
- Frame Size 20
- Handlebar Width, mm 620
- Stem Length, mm 110
- Angle 25
- Crank Length, mm 175
- Seatpost Length, mm 400
- Steerer Length, mm 214

---

**Key features:**
- **Rider:** Cruiser
- **Frameset**
  - Alpha aluminum- light, strong, stiff and efficient
  - Sporty looks and ride- upright, fun ride
- **Wheelset**
  - Alloy rims and stainless spokes- lightweight acceleration, corrosion resistance
- **Components**
  - Internal 4-speed gearing- no derailleur, but you can still get up hills
  - Direct pull brakes- super stoppers
Town & Country

FRAMESET
MAIN TUBES ......... Alpha aluminum
STAYS ............... Alpha aluminum
FORK ............... Hi Tensile steel
Axe-crown length, mm 365
HEADSET .......... Sealed
Size 22.2/32.5/26.4
Stack height, mm 35.5

CONTROLS
HANDLEBAR ......... Cruiser, steel
Clamp diameter, mm 25.4
STEM ............... Alloy
Steeer clamp height, mm
SHIFT LEVERS ...... Shimano Revo
GRIPS .............. Oasis, dual density

DRIVETRAIN
CRANKSET .......... CPI, 33T
Bolt hole circle, mm 1 piece
BB ................. Cartridge
Shell x axle, mm 68 x 110, Square
CHAIN ............ KMC 410
Chain type 108"
Chain length (links) 112
CASSETTE ......... 20T

BIKE WEIGHT
32.0 lb.
14.53 kg.

GEARING
33
32
20 43
59

WHEELSET
FRONT WHEEL ...... Alloy, nutted hub, 36°, Matrix 550 rim
E.R.D., mm 559
Rim strip Rubber
FRONT TIRE ......... Whitewall
Tire size 26 x 2.0
REAR WHEEL ...... Shimano Nexus 3spd w/coaster brake hub, 36°, Matrix 550 rim
E.R.D., mm 559
Rim strip Rubber
REAR TIRE ......... Whitewall
Tire size 26 x 2.0
SPOKES ............ 14G stainless
Front, mm 264, 3x
Rear, mm 260/260, 3x
INNER TUBES ...... Schraeder valve

OTHER
SEATPOST ......... Alloy
Outer diameter, mm 25.6
SADDLE ......... Trek Webspring Cruiser
BRAKES ......... Coaster type
PEDALS ......... Platform
Axle diameter 1/2"
SEAT BINDER ...... M6 x 55
Inner diameter, mm
ADDITIONALS ....... Kickstand, chainguard
COLORS
Mistral Blue • Dark BlueWhite decals

FIT
Frame Size 20 17W
Handlebar Width, mm 700 700
Stem Length, mm 80 80
Angle 25 25
Crank Length, mm 170 170
Seatpost Length, mm 350 350
Steerer Length, mm 184 149

Key features:
Rider: Cruiser
Frameset
Steel- strong and durable
Sporty looks and ride- upright, fun ride
Wheelset
Alloy rims and stainless spokes- lightweight acceleration, corrosion resistance
Components
Totally simple 3 speed with coaster brake- gearing with easy operation
Cruiser bars and saddle- comfort and style
Cruiser Calypso

FRAMESET
MAIN TUBES ....... Alpha aluminum
STAYS ............... Alpha aluminum
FORK ............... Hi Tensile steel
HEADSET .......... Sealed

CONTROLS
HANDLEBAR ....... Cruiser, steel
STEM ............... Alloy
SHIFT LEVERS ...... SRAM MRX Plus
BRAKE LEVERS ..... Alloy
GRIPS .............. Kraton

DRIVETRAIN
RR DERAILEUR .... Shimano TY-40 GS
CRANKSET .......... One piece type, 40T
BB .................. One-piece type
CHAIN ............. KMC Z-51
CASSETTE .......... Sun Race 13-34, 7spd

GEARING
40
13 81
15 70
17 62
19 55
22 48
26 40
34 31

BIKE WEIGHT
32.0 lb.
14.53 kg.

WHEELSET
FRONT WHEEL ...... Alloy, nutted hub, 36°, Matrix 550 rim
  E.R.D., mm 559
  Rim strip Rubber
  Tire size 26 x 2.0
REAR WHEEL ...... Alloy, nutted hub, 36°, Matrix 550 rim
  E.R.D., mm 559
  Rim strip Rubber
  Tire size 26 x 2.0
FRONT TIRE ......... Whitewall
  Tire size 26 x 2.0
REAR TIRE ......... Whitewall
  Tire size 26 x 2.0
SPOKES ............ 14G stainless
  Front, mm 264, 3x
  Rear, mm 260/260, 3x
INNER TUBES ....... Schraeder valve

OTHER
SEATPOST .......... Alloy
  Outer diameter, mm 25.6
SADDLE ............. Trek Webspring Cruiser
BRAKES ............. Alloy cantilever
PEDALS ............. Platform
  Axle diameter 1/2"
SEAT BINDER ........ M6 x 55
  Inner diameter, mm

ADDITIONALS ....... Kickstand, chainguard
COLORS
Anthracite • Silver/Gold decals

Key features:
Rider: Cruiser
Frameset
  Steel- strong and durable
  Sporty looks and ride- upright, fun ride
Wheelset
  Alloy rims and stainless spokes- lightweight acceleration, corrosion resistance
Components
  Wide ratio 7 speed- Cruise uphill!
  Cruiser bars and saddle- comfort and style

FIT
<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Handlebar Width, mm</th>
<th>Stem Length, mm</th>
<th>Crank Length, mm</th>
<th>Seatpost Length, mm</th>
<th>Steerer Length, mm</th>
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<td>20</td>
<td>700</td>
<td>170</td>
<td>350</td>
<td>184</td>
</tr>
</tbody>
</table>
Cruiser Classic

**FRAMESET**
- MAIN TUBES ........ Alpha aluminum
- STAYS ............... Alpha aluminum
- FORK ................. Hi Tensile steel

**CONTROLS**
- HANDLEBAR ........... Cruiser, steel
  - Clamp diameter, mm 25.4
- STEM .................. Alloy
  - Steerer clamp height, mm
- GRIPS ................... Cruiser

**DRIVETRAIN**
- CRANKSET .......... One piece type, 40T
  - Bolt hole circle, mm 1 piece
- BB .................... One-piece type
  - Shell x axle, mm One-piece type,
- CHAIN ............... KMC 410
  - Chain type 1/8"
  - Chain length (links) 100
- CASSETTE .......... 18

**GEARING**
- 40
- 18 58

**BIKE WEIGHT**
- 32.0 lb.
- 14.53 kg.

**WHEELSET**
- FRONT WHEEL ........ Alloy, nutted hub, 36°, Matrix 550 rim
  - E.R.D., mm 559
  - Rim strip Rubber
- FRONT TIRE .......... Whitewall
  - Tire size 26 x 2.0
- REAR WHEEL .......... Shimano coaster hub, 36°, Matrix 550 rim
  - E.R.D., mm 559
  - Rim strip Rubber
- REAR TIRE .......... Whitewall
  - Tire size 26 x 2.0
- SPOKES ............... 14G stainless
  - Front, mm 264, 3x
  - Rear, mm 260/260, 3x
- INNER TUBES .......... Schraeder valve

**OTHER**
- SEATPOST ............ Alloy
  - Outer diameter, mm 25.6
- SADDLE .............. Trek Webspring Cruiser
- BRAKES .............. Coaster type
- PEDALS .............. Platform
  - Axle diameter 1/2"
- SEAT BINDER .......... M6 x 55
- ADDITIONAL .......... Kickstand, chainguard

**COLORS**
- Big Island Blue • White/Black decals

**Key features:**

**Rider: Cruiser**

**Frameset**
- Steel- strong and durable
- Sporty looks and ride- upright, fun ride

**Wheelset**
- Alloy rims and stainless spokes- lightweight acceleration, corrosion resistance

**Components**
- Totally simple coaster brakes- no cables, easy operation
- Cruiser bars and saddle- comfort and style
New for 2002
The 2002 line shares the same frame as the 2001. Why change the bike that won the Tour de France?

Geometry
The geometry of the OCLV 110 and 120 frames are basically the same, except the Superlight uses a special internal headset bearing which requires a longer head tube. Both bikes are built for classic road racing feel and performance. Angles, top tubes, and bottom bracket height fit the demands of racing. Comfort, pedaling efficiency, and handling are all optimized for long stage races.

Ride
The first thing most riders notice about OCLV is how incredibly light these bikes feel. They simply “disappear beneath you”. You feel like you’re flying around, with your legs spinning.

In terms of handling, these frames are full race. The frame rigidity makes an OCLV bike corner like it’s on rails.

Comfort is also an outstanding feature. Despite a fairly stiff frame feel, OCLV road bikes absorb a lot of road shock. Part of the secret is carefully designed carbon layup, which allows the engineer to separately control vertical and horizontal flex patterns. The other secret is that frame joints made from carbon lugs can flex. Metal joints cannot flex like this, or they risk fatigue failure.

Frame details
OCLV road bikes have large diameter tubes for excellent frame rigidity. By stiffening the bottom bracket area, these frames provide efficient transfer of your pedaling power to the rear wheel. No energy is wasted. Acceleration is excellent. Of course, the exceedingly low weight helps here, too.

The fittings on the OCLV road bikes are all forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

All OCLV road bikes have 2 water bottle mounts.

FOR THE MECHANIC
Superlight headset
The OCLV 110 uses a proprietary headset system. See the back pages of this manual for maintenance details.

Removing Headset Cups
When removing a headset in an OCLV frame, make sure the headset removal tool is engaging the headset cup. OCLV framesets do not utilize a continuous head tube, but instead use two short inserts to support the headset cups. If the headset tool is outside the insert rather than inside the insert and pressing on the cup, frame damage can result.

The seat tube of our OCLV road bikes uses a fiberglass internal sleeve to prevent galvanic corrosion of the seat-post to the frame. Do not grease the seat post, or the seatpost clamp may not provide adequate clamping force.

OCLV 110 and 120 Road

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>MILLIMETERS</th>
<th>INCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head angle</td>
<td>72.0 72.5 73.0 73.8 73.8 74.0 74.0</td>
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</tr>
<tr>
<td>Seat angle</td>
<td>75.0 75.0 74.0 73.5 73.0 73.0 72.5</td>
<td></td>
</tr>
<tr>
<td>Standover</td>
<td>740 754 769 789 807 826 844</td>
<td></td>
</tr>
<tr>
<td>Seat tube</td>
<td>500 520 540 560 580 600 620</td>
<td></td>
</tr>
<tr>
<td>Head tube</td>
<td>101 104 121 140 159 177</td>
<td></td>
</tr>
<tr>
<td>Eff top tube</td>
<td>525 531 546 561 572 582 592</td>
<td></td>
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<tr>
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<tr>
<td>BB height</td>
<td>266 266 268 268 268 268</td>
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<tr>
<td>Offset</td>
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<td></td>
</tr>
<tr>
<td>Trail</td>
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</tr>
<tr>
<td>Wheelbase</td>
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</table>

OCLV 110 Superlight

<table>
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</thead>
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</tr>
<tr>
<td>Seat angle</td>
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</tr>
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<td>Standover</td>
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<tr>
<td>Head tube</td>
<td>111 111 114 131 149 168 187</td>
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<tr>
<td>Eff top tube</td>
<td>525 531 546 561 572 582 592</td>
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<td>Chainstays</td>
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<tr>
<td>BB height</td>
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<tr>
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</table>

OCLV 120

<table>
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<th>Frame sizes</th>
<th>MILLIMETERS</th>
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</thead>
<tbody>
<tr>
<td>Head angle</td>
<td>50 52 54 56 58 60 62</td>
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</tr>
<tr>
<td>Seat angle</td>
<td>72.0 72.5 73.0 73.8 73.8 74.0 74.0</td>
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<tr>
<td>Standover</td>
<td>740 754 769 789 807 826 844</td>
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<tr>
<td>Seat tube</td>
<td>500 520 540 560 580 600 620</td>
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<tr>
<td>Head tube</td>
<td>101 104 121 140 159 177</td>
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<tr>
<td>Eff top tube</td>
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<td>Chainstays</td>
<td>408 408 410 410 412 412 412</td>
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</tr>
<tr>
<td>BB height</td>
<td>266 266 268 268 268 268</td>
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<td>Offset</td>
<td>47 47 47 43 43 43</td>
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<tr>
<td>Trail</td>
<td>61 58 55 54 54 53 53</td>
<td></td>
</tr>
<tr>
<td>Wheelbase</td>
<td>980 982 986 987 994 1001 1006</td>
<td></td>
</tr>
</tbody>
</table>

FOR THE MECHANIC
Superlight headset
The OCLV 110 uses a proprietary headset system. See the back pages of this manual for maintenance details.

Removing Headset Cups
When removing a headset in an OCLV frame, make sure the headset removal tool is engaging the headset cup. OCLV framesets do not utilize a continuous head tube, but instead use two short inserts to support the headset cups. If the headset tool is outside the insert rather than inside the insert and pressing on the cup, frame damage can result.

The seat tube of our OCLV road bikes uses a fiberglass internal sleeve to prevent galvanic corrosion of the seat-post to the frame. Do not grease the seat post, or the seatpost clamp may not provide adequate clamping force.
5900

FRAMESET
MAIN TUBES .... OCLV 110, carbon fiber composite
STAYS ............ OCLV 110, carbon fiber composite
Frame weight 2.3 lb (1.03 kg)
FORK .............. Superlight carbon composite
Axle-crown length, mm 376.25
HEADSET .......... Klein Airheadset lower/ Cane Creek S-2 upper
Size 25.4/34.0/1.75”/33.4
Stack height, mm 12.6

CONTROLS
HANDLEBAR ..... Bontrager Race Lite
Clamp diameter, mm 31.75
STEM ............ Bontrager Race Lite
Stem clamp height, mm 39.5
SHIFT LEVERS .... Shimano Dura-Ace STI
BRAKE LEVERS ..... Integrated brake/shift
GRIPS ............ Powercork

DRIVETRAIN
FT DERAILLEUR .... Shimano Dura-Ace
Cable routing Down pull
Attachment Braze-on type
RR DERAILLEUR .... Shimano Dura-Ace
CRANKSET ....... Shimano Dura-Ace 53/39
Bolt hole circle, mm 130
BB ............... Shimano Dura-Ace
Shell x axle, mm 68 x 109.5, Splined, Shimano
CHAIN ............ Shimano Dura-Ace
Chain type 9 speed
Chain length (links) 108
CASSETTE ......... Shimano Dura-Ace 12-23, 9spd

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
15.4 lb.
6.99 kg.

WHEELSET
FRONT WHEEL ..... Bontrager Race X-Lite, 20°
E.R.D., mm 592
Front, mm Velox 16mm
FRONT TIRE ..... Bontrager Race X-Lite, folding
Tire size 700 x 23c
REAR WHEEL ..... Bontrager Race X-Lite, 24°
E.R.D., mm 595
Rim strip Velox 16mm
REAR TIRE ..... Bontrager Race X-Lite, folding
Tire size 700 x 23c
SPOKES .......... DT Aero, alloy nipples
Front, mm 278, Radial
Rear, mm 291/291, 2x
INNER TUBES ..... Presta valve, 48mm stem

OTHER
SEATPOST ......... Thomson Elite
Oater diameter, mm 27.2
SADDLE ............ Selle San Marco Era, Ti/leather
BRAKES .......... Shimano Dura-Ace
PEDALS .......... -not supplied-
Axle diameter 9/16”
SEAT BINDER ......... Alloy w/integral bolt
Inner diameter, mm 35.0
ADDITIONALS ....... 2 water bottle mounts

COLORS
Bright Silver/Satin Silver • Black/Silver decals • Bright Silver fork

Key features:
Rider: Racer
Frameset
OCLV 110- Our best (and the world’s lightest) racing frameset- fast and efficient
Wheelset
Bontrager Paired Spoke Technology- light, aero
Components
Professional level (Dura-Ace)- No shortcuts- the same bike as ridden in the Tour de France
### 5500

**FRAMESET**

| MAIN TUBES | OCLV 120, carbon fiber composite |
| STAYS | OCLV 120, carbon fiber composite |
| FORK | Air Rail |
| HEADSET | Dia-Compe S-6 A-headset, alloy |

**CONTROLS**

| HANDLEBAR | Bontrager Race Lite |
| STEM | Bontrager Race Lite |
| SHIFT LEVERS | Shimano Dura-Ace STI, Flite Deck compatible |
| BRAKE LEVERS | Integrated brake/shift |

**DRIVETRAIN**

| FT DERAILLEUR | Shimano Dura-Ace |
| RR DERAILLEUR | Shimano Dura-Ace |
| CRANKSET | Shimano Dura-Ace 53/39 |
| BB | Shimano Dura-Ace |
| CHAIN | Shimano Dura-Ace |
| CASSETTE | Shimano Dura-Ace 12-23, 9spd |

**BIKE WEIGHT**

- 16.3 lb. (7.40 kg)
Frame Weight: 2.4 lb (1.09 kg)

Fork: Air Rail

Headset: Cane Creek S-2 Aheadset

Size: 25.4/34.0/30.0

Stack height, mm: 26.5

Controls

Handlebar: Bontrager Race

Clamp diameter, mm: 26.0

Stem: Bontrager Race

Stoker clamp height, mm: 40.0

Shift Levers: Shimano Ultegra STI, Flite Deck compatible

Braze Levers: Integrated brake/shift

Grips: 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: 130

BB: Shimano Ultegra

Shell x axle, mm: 68 x 109.5, Splined, Shimano

Chain: Shimano HG-72

Chain type: 9 speed

Chain length (forks): 108

Cassette: Shimano Ultegra 12-25, 9sp

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

18.8 lb.

8.54 kg.

Key features:

Rider: Racer

Frameset: OCLV 120- Lance's best friend- 100 grams lighter than the bike he rode to win the 1999 Tour de France

Wheelset: Bontrager Paired Spoke Technology- light, aero

Components: Race level (Ultegra)- Pro performance at a more affordable price (also available in a triple)

FIT

Frame Size: 50 52 54

Rider height: 65 66 68

Cm: 165 169 173

Handlebar Width, mm: 380 400 400

Stem Length, mm: 70 80 90

Angle: 10 10 10

Crank Length, mm: 170 170 172.5

Seapost Length, mm: 250 250 250

Steerer Length, mm: 208.5 208.5 211.5

BIKE WEIGHT

19.1 lb.

8.67 kg.
No excuses.
Where else can you buy the exact same frameset as the one that won several stages at the 2001 Tour de France? Yes, Lance rode a stock Trek OCLV TT frame.

You can proudly ride the same frames as the Postal team. The only problem with owning one of these beautys is if your buddy clocks 40 kilometers faster than you do, you can no longer blame the equipment.

TT frame
An old maxim states that Aero means heavy. The Trek OCLV Time Trial frame disproves the old maxim.

These frames were designed specifically for Lance and the Postal team in a wind tunnel. But we built a few extras, because we knew you'd want one.

The frame is built in just three sizes; S, M, and L.
The seat height is adjustable by using a shim stack, measured from the saddle rails to the center of the bottom bracket. Top tube length is measure here from the top of the seat mast to the top of the head tube. We expect that you will use your favorite aero bar and stem combination to fine tune the fit.

The frame uses a 1 1/8" headset, and 700c wheels. It has two standard water bottle mounts.

Color:

<table>
<thead>
<tr>
<th>Size</th>
<th>S</th>
<th>M</th>
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<tbody>
<tr>
<td>Top</td>
<td>589-602</td>
<td>603-616</td>
<td>617-631</td>
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<tr>
<td>Seat</td>
<td>664-692</td>
<td>691-719</td>
<td>718-746</td>
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</table>
New for 2002

This year’s 2300 frameset shares something from the 2001 model, but it’s really an entirely new frame. First, its made with our new ZR9000 aluminum, so its lighter and stronger than the 2001. It also incorporates the new internal headset design, giving it a sleek look. Like the 2001, the 2002 version uses the new oversize steering system (1 1/8”), and so do the WSD frames.

The 2002 model 2300 also got a style update; round oversized down tube and traditional fastback seat stays. While we like the traditional look, we’re even more excited about the increase in frame rigidity and overall weight reduction.

Geometry

The ZR9000 road geometry is basically the same as our Alph SLR frameset except that the head tube is taller to accommodate the internal bearing system.

Ride

These frames are full race, providing excellent frame rigidity and handling. However, they are not overly harsh. Our engineers designed the frame materials, tubing diameters, and wall thicknesses to ride like a classic race bike, and to avoid the teeth rattling that some aluminum frame create.

Frame details

ZR9000 frames are aluminum, but different than anything else on the market.

ZR9000 frames provide 2 water bottle mounts, except the 43 and 47cm WSD frames which have seat tubes which are too short.

ZR9000 frame cable routing uses shift pegs on the down tube for easy on-the-fly adjustment of the indexed shift systems. They use an open brake cable under the top tube, leaving a clean look. These frames are true racing frames, so they do not have eyelets for racks or fenders.

<table>
<thead>
<tr>
<th>MILLIMETERS</th>
<th>ZR9000 Road</th>
<th>Alpha SLR Road</th>
<th>Alpha SLR Road WSD</th>
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<tbody>
<tr>
<td>Frame sizes</td>
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<tr>
<td>Head angle</td>
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<tr>
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<td>743 757 772 792 810 829 858</td>
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<tr>
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<td>Head tube</td>
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</tr>
<tr>
<td>Eff top tube</td>
<td>743 757 772 792 810 829 858</td>
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<tr>
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<td>417 417 417 417 417 417 417</td>
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<tr>
<td>Trail</td>
<td>61 58 55 54 54 53 53</td>
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<tr>
<td>Wheelbase</td>
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<td>Chainstays</td>
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<tr>
<td>BB height</td>
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<tr>
<td>Offset</td>
</tr>
<tr>
<td>Trail</td>
</tr>
<tr>
<td>Wheelbase</td>
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</table>

<table>
<thead>
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<th>MILLIMETERS</th>
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<tbody>
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<td>Trail</td>
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<td>Wheelbase</td>
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<table>
<thead>
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<th>INCHES</th>
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<td>Trail</td>
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<tr>
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## 2300

### FRAMESET

<table>
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<tr>
<th>Part</th>
<th>Specification</th>
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<tbody>
<tr>
<td>MAIN TUBES</td>
<td>ZR9000</td>
</tr>
<tr>
<td>STAYS</td>
<td>ZR9000</td>
</tr>
<tr>
<td>FORK</td>
<td>Air Rail</td>
</tr>
<tr>
<td>HEADSET</td>
<td>Cane Creek Internal</td>
</tr>
<tr>
<td>Size</td>
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<tr>
<td>Stack height, mm</td>
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<th>Bontrager Race</th>
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<tr>
<td>Stem</td>
<td>Bontrager Race</td>
</tr>
<tr>
<td>Shift Levers</td>
<td>Shimano Ultegra STI, Flite Deck compatible</td>
</tr>
<tr>
<td>Brake Levers</td>
<td>Integrated brake/shift</td>
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<tr>
<td>Grips</td>
<td>Powercork</td>
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### DRIVETRAIN

<table>
<thead>
<tr>
<th>FT Derailleur</th>
<th>Shimano Ultegra</th>
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<tr>
<td>Crankset</td>
<td>Shimano Ultegra 53/39</td>
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<tr>
<td>BB</td>
<td>Shimano Ultegra</td>
</tr>
<tr>
<td>Chain</td>
<td>Shimano HG-72</td>
</tr>
<tr>
<td>CASSETTE</td>
<td>Shimano Ultegra 12-25, 9spd</td>
</tr>
</tbody>
</table>

### GEARING

<table>
<thead>
<tr>
<th>Gear</th>
<th>Front</th>
<th>Rear</th>
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<td>61</td>
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<td>25</td>
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### BIKE WEIGHT

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<thead>
<tr>
<th>Gear</th>
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<tr>
<td>39 53</td>
<td>18.1 lb.</td>
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<tr>
<td></td>
<td>8.22 kg.</td>
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### Key features:

- **Rider: Racer**
  - Alpha SLR aluminum- butted for low weight, high strength
  - Similar geometry to 5900, 5500
  - New 1 1/8” headset- low weight, precise steering
- **Frameset**
  - Bontrager Paired Spoke Technology- light, aero
- **Components**
  - Race level (Ultegra)- Pro performance at a more affordable price(also available in a triple)

### WHEELSET

<table>
<thead>
<tr>
<th>Part</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>FRONT WHEEL</td>
<td>Bontrager Race Lite Road, 20º</td>
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<tr>
<td>RR WHEEL</td>
<td>Bontrager Race Lite Road, 24º</td>
</tr>
<tr>
<td>FRONT TIRE</td>
<td>Bontrager Race Lite, folding</td>
</tr>
<tr>
<td>REAR TIRE</td>
<td>Bontrager Race Lite, folding</td>
</tr>
<tr>
<td>SPOKES</td>
<td>DT Aeno, alloy nipples</td>
</tr>
<tr>
<td>BRAKES</td>
<td>Shimano Ultegra</td>
</tr>
<tr>
<td>PEDALS</td>
<td>Shimano Ultegra</td>
</tr>
<tr>
<td>SEATPOST</td>
<td>Bontrager Race</td>
</tr>
<tr>
<td>SEAT BINDER</td>
<td>Alloy w/integral bolt</td>
</tr>
<tr>
<td>ADDITIONALS</td>
<td>2 water bottle mounts</td>
</tr>
</tbody>
</table>

### COLORS

- Pearl White • Silver/Black decals
- Starry Night • Blue/White decals

## 2300 T

### DRIVETRAIN

<table>
<thead>
<tr>
<th>FT Derailleur</th>
<th>Shimano Ultegra T</th>
</tr>
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<tbody>
<tr>
<td>RR Derailleur</td>
<td>Shimano Ultegra GS</td>
</tr>
<tr>
<td>Crankset</td>
<td>Shimano Ultegra 52/42/30</td>
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<tr>
<td>BB</td>
<td>Shimano Ultegra</td>
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<tr>
<td>Shell x axle, mm</td>
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### GEARING

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### BIKE WEIGHT

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<tr>
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<td>18.4 lb.</td>
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<tr>
<td></td>
<td>8.35 kg.</td>
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</table>
2300 WSD T

FRAMESET

MAIN TUBES ........ ZR9000
STAYS ............... ZR9000
ORK ............... Carbon Aero
HEADSET ............ Cane Creek Internal

CONTROLS

HANDLEBAR ......... Bontrager Race
STEM ............... Bontrager Race
SHIFT LEVERS ...... Shimano Ultegra STI, Flite Deck compatible
BRAKE LEVERS ...... Integrated brake/shift
GRIPS ............... Powercork

DRIVETRAIN

FT DERAILLEUR .... Shimano Ultegra T
RR DERAILLEUR .... Shimano Ultegra GS
CRANKSET .......... Shimano Ultegra 52/42/30
BB ................. Shimano Ultegra
CHAIN .............. Shimano HG-72
CASSETTE .......... Shimano Ultegra 12-25, 9spd

GEARING

30 42 52
12 61 86 106
13 57 79 98
14 52 73 91
15 49 69 85
17 43 60 75
19 39 54 67
21 35 49 61
23 32 45 55
25 29 41 51

BIKE WEIGHT

17.6 lb.
7.99 kg.

WHEELSET

FRONT WHEEL ....... Bontrager Race Lite Road, 20°
R.D., mm
650 x 23c

FRONT TIRE ........ Bontrager Race Lite, folding
Tire size

REAR WHEEL ......... Bontrager Race Lite Road, 24°
R.D., mm
650 x 23c

REAR TIRE .......... Bontrager Race Lite, folding
Tire size

SPOKES ............ DT Aero, alloy nipples

INNER TUBES ....... Presta valve, 48mm stem

OTHER

SEATPOST .......... Bontrager Race
Outer diameter, mm
27.2

SADDLE ............. Bontrager FS 2000 WSD, CrMo/leather/Gel
BRAKES ............. Shimano Ultegra
PEDALS ............. -not supplied-

SEAT Binder ......... Alloy w/integral bolt
Inner diameter, mm
31.9

ADDITIONALS ...... See Men's for wheel info on 54cm
2 water bottle mounts (1 on 43, 47cm)

COLORS

Georgia Blue • Black/Silver decals

Key features:

Rider: Woman Racer
Frameset

ZR9000 aluminum- butted for low weight, high strength
WSD geometry- fit and performance for a woman
Carbon aero fork- more shock absorptive

Wheelset

Bontrager Paired Spoke Technology- light, aero

Components

Race level (Ultegra)- Pro performance at a more affordable price
WSD fork, bars, saddle, crank length- fit and performance for a woman


**New for 2002**

The 2002 Alpha SL frame platform got a style update; round oversized down tube and traditional fastback seat stays. While we like the traditional look, we’re even more excited about the increase in frame rigidity and overall weight reduction.

**Geometry**

The geometry of the Alpha SL frame stays as it was in 2001, a great all-round road racing feel, but the update to the tube set shape increases its performance.

The Alpha SL geometry is very similar to our OCLV frames. The major difference is that the Alpha SL frames share the same chainstay length, while the OCLV road bikes vary by several millimeters. In other words, there are full race design bikes. The WSD models are adapted to fit and perform better for women.

**Ride**

These frames are full race, providing excellent frame rigidity and handling. However, they are not overly harsh. Our engineers designed the frame materials, tubing diameters, and wall thicknesses to ride like a classic race bike, and to avoid the teeth rattling that some aluminum frame create.

**Frame details**

Alpha SL frames are 6061 T6 aluminum.

Alpha SL frames provide 2 water bottle mounts, except the 43 and 47cm WSD frames which have seat tubes which are too short.

Alpha SL cable routing uses downtube shift bosses for compatibility with Shimano STI shifting. They use an open brake cable under the top tube, leaving a clean look. Although these frames are at home on the race course, they are also great for more recreational riding. We’ve added eyelets on the rear dropouts to provide mounting points for a rack or fenders. This way, the Alpha SL frames can be used for commuting or light touring.

---

### Alpha SL Road

| Frame sizes | 50 | 52 | 54 | 56 | 58 | 60 | 63 |
| Head angle | 72.0 | 72.5 | 73.0 | 73.8 | 73.8 | 74.0 | 74.0 |
| Seat angle | 75.0 | 75.0 | 74.0 | 73.0 | 73.0 | 73.0 | 72.5 |

| Standover | 740 | 754 | 768 | 798 | 806 | 825 | 854 |
| Seat tube | 500 | 520 | 540 | 560 | 580 | 600 | 630 |
| Head tube | 97 | 97 | 105 | 123 | 140 | 159 | 189 |
| Eff top tube | 521 | 526 | 544 | 560 | 571 | 580 | 601 |
| Chainstays | 417 | 417 | 417 | 417 | 417 | 417 | 417 |
| BB height | 266 | 266 | 266 | 268 | 268 | 268 | 270 |
| Offset | 47.0 | 47.0 | 47.0 | 43.0 | 43.0 | 43.0 | 43.0 |
| Trail | 61 | 58 | 55 | 54 | 54 | 53 | 53 |
| Wheelbase | 988 | 989 | 993 | 994 | 999 | 1006 | 1021 |

| Standover | 29.1 | 29.7 | 30.2 | 31.0 | 31.7 | 32.5 | 33.6 |
| Seat tube | 19.7 | 20.5 | 21.3 | 22.0 | 22.8 | 23.6 | 24.8 |
| Head tube | 3.8 | 3.8 | 4.1 | 4.8 | 5.5 | 6.2 | 7.4 |
| Eff top tube | 20.5 | 20.7 | 21.4 | 22.1 | 22.5 | 22.8 | 23.7 |
| Chainstays | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 |
| BB height | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.6 |
| Offset | 1.9 | 1.9 | 1.9 | 1.7 | 1.7 | 1.7 | 1.7 |
| Trail | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| Wheelbase | 38.9 | 38.9 | 39.1 | 39.1 | 39.3 | 39.6 | 40.2 |

---

### Alpha SL Road WSD

| Frame sizes | 43 | 47 | 52 | 54 |
| Head angle | 73.0 | 72.5 | 72.5 | 72.5 |
| Seat angle | 76.0 | 75.0 | 74.0 | 74.0 |

| Standover | 683 | 708 | 751 | 763 |
| Seat tube | 430 | 470 | 520 | 533 |
| Head tube | 97 | 97 | 133 | 97 |
| Eff top tube | 488 | 499 | 504 | 525 |
| Chainstays | 412 | 412 | 412 | 417 |
| BB height | 262 | 264 | 264 | 266 |
| Offset | 38.1 | 38.1 | 38.1 | 47.0 |
| Trail | 55 | 58 | 58 | 58 |
| Wheelbase | 950 | 956 | 954 | 978 |

| Standover | 26.9 | 27.9 | 29.6 | 30.0 |
| Seat tube | 16.9 | 18.5 | 20.5 | 21.0 |
| Head tube | 3.8 | 3.8 | 5.2 | 3.8 |
| Eff top tube | 19.2 | 19.6 | 19.8 | 20.7 |
| Chainstays | 16.2 | 16.2 | 16.2 | 16.4 |
| BB height | 10.3 | 10.4 | 10.4 | 10.5 |
| Offset | 1.5 | 1.5 | 1.5 | 1.9 |
| Trail | 2.2 | 2.3 | 2.3 | 2.3 |
| Wheelbase | 37.4 | 37.6 | 37.6 | 38.5 |
2200

FRAMESET

MAIN TUBES . . . . . . . Alpha SL aluminum
STAYS . . . . . . . . . . . . . Alpha SL aluminum
FORK . . . . . . . . . . . . . Air Rail
HEADSET . . . . . . . Cane Creek C-1 Aheadset

CONTROLS

HANDLEBAR . . . . . . . Bontrager Race
STEM . . . . . . . . . . . . . Bontrager Race
SHIFT LEVERS . . . . . . Shimano Ultegra STI, Flite Deck compatible
BRAKE LEVERS . . . Integrated brake/shift
GRIPS . . . . . . . . . . . . . Powercork

DRIVETRAIN

FT DERRAILEUR . . . Shimano 105
RR DERRAILEUR . . . Shimano Ultegra
CRANKSET . . . . Shimano Ultegra 53/39
BB . . . . . . . . . . . . . Shimano 105
CHAIN . . . . . . . Shimano HG-72
CASSETTE . . . . Shimano HG70 12-25, 9sp

GEARING

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BIKE WEIGHT

20.0 lb.  9.08 kg.

2200 T

DRIVETRAIN

FT DERRAILEUR . . . Shimano 105 T
RR DERRAILEUR . . . Shimano Ultegra GS
CRANKSET . . . . Shimano Ultegra 52/42/30
BB . . . . . . . . . . . . . Shimano 105

GEARING

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<thead>
<tr>
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BIKE WEIGHT

20.3 lb.  9.22 kg.
## 2200 WSD T

### FRAMESET
- **MAIN TUBES** ....... Alpha SL aluminum
- **STAYS** ............ Alpha SL aluminum
- **FORK** ............ Carbon Classic 650
- **HEADSET** ............ STR Aheadset
  - Size: 25.4/36.0/30.0
  - Stack height, mm: 23.2

### CONTROLS
- **HANDLEBAR** ....... Bontrager Race
  - Clamp diameter, mm: 26.0
- **STEM** ............ Bontrager Race
  - Steerer clamp height, mm: 40.0
- **SHIFT LEVERS** ....... Shimano Ultegra STI, Flite Deck compatible
- **BRAKE LEVERS** ....... Integrated brake/shift
- **GRIPS** ............ Powercork

### DRIVETRAIN
- **FT DERAILLEUR** ....... Shimano 105 T
  - Cable routing: Down pull
  - Attachment: Braz-on type w/34.9mm clamp
- **RR DERAILLEUR** ....... Shimano Ultegra GS
- **CRANKSET** ......... Shimano Ultegra 52/42/30
  - Bolt hole circle, mm: 74/130
- **BB** ............ Shimano 105
  - Shell x axle, mm: 68 x 118, Splined, Shimano
- **CHAIN** ............ Shimano HG-72
  - Chain type: 9 speed
  - Chain length (links): 108
- **CASSETTE** ............ Shimano HG70 12-25, 9spd

### GEARING
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### BIKE WEIGHT
- 19.1 lb.
- 8.67 kg.

### WHEELSET
- **FRONT WHEEL** ....... Bontrager Select Road, 20°
  - E.R.D., mm: 539
  - Rim strip: Velox 16mm
- **FRONT TIRE** ....... IRC Triathlon
  - Tire size: 650 x 25c
- **REAR WHEEL** ....... Bontrager Select Road, 24°
  - E.R.D., mm: 540
  - Rim strip: Velox 16mm
- **REAR TIRE** ....... IRC Triathlon
  - Tire size: 650 x 25c
- **SPOKES** ............ DT 14/15G butted stainless
  - Front, mm: 252, Radial
  - Rear, mm: 268/268, 2x
- **INNER TUBES** ....... Presta valve, 48mm stem

### OTHER
- **SEATPOST** ....... Bontrager Race
  - Outer diameter, mm: 27.2
- **SADDLE** ............ Bontrager FS 2000 WSD, CrMo
- **BRAKES** ............ Shimano 105
- **PEDALS** ............ Shimano SPD M515, clipless
  - Axle diameter: 9/16"
- **SEAT BINDER** ....... Alloy w/integral bolt
  - Inner diameter, mm: 31.9
- **ADDITIONALS** ....... 2 bottle mounts (1 on 43)
  - Headset shim from 1" for to 1 1/8" head tube
  - See Men's for wheel info on 54cm

### COLORS
- Candy Red • Gold/Silver decals

### Key features:

**Rider:** Woman Racer or Fast century rider  
**Frameset**  
Alpha SL aluminum- butted for low weight, high strength  
WSD geometry- fit and performance for a woman  
Carbon Classic fork- more shock absorptive  
**Wheelset**  
Bontrager Paired Spoke Technology- light, aero  
**Components**  
Race level (105)- Race performance at a more affordable price  
WSD fork, bars, saddle, crank length- fit and performance for a woman
**2000**

### FRAMESET

| MAIN TUBES      | Alpha SL aluminum |
| STAYS          | Alpha SL aluminum |
| FORK           | Carbon Classic    |

**HEADSET**

| Type          | STR Aheadset |

**Axle-crown length, mm**

| 370 |

**Stack height, mm**

| 23.0 |

### CONTROLS

| HANDLEBAR   | Alloy Ergo |
| STEM        | Alloy quick change, direct connect |
| SHIFT LEVERS| Shimano 105 STI, Flite Deck compatible |
| BRAKE LEVERS| Integrated brake/shift |
| GRIPS       | Powercork |

### DRIVETRAIN

| FT DERAILLEUR | Shimano Tiagra T |
| RR DERAILLEUR | Shimano 105 GS |
| CRANKSET      | Shimano 105 52/42/30 |
| BB            | Shimano 105 |
| CHAIN         | Shimano HG-72 |

**CASSETTE**

| Shimano HG50 12-25, 9spd |

### WHEELSET

| FRONT WHEEL   | Shimano Tiagra hub, 32°, Aurora rim |
| FRONT TIRE    | IRC Red Storm |
| REAR WHEEL    | Shimano Tiagra hub, 32°, Aurora RDR rim |

**Tire size**

| 700 x 25c |

**Rim strip**

| Velox 16mm |

### BIKE WEIGHT

| Frame weight |
| 21.2 lb. |
| 9.62 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 66 |
| 23 35 48 60 |
| 25 32 44 55 |

### FIT

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<td>Steerer Length, mm</td>
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**Key features:**

- **Rider:** Enthusiast or Century rider
- **Frameset:**
  - Alpha SL aluminum- butted for low weight, high strength
  - Similar geometry to 5900, 5500
- **Wheelset:**
  - Aurora rim- seamless braking, lightweight acceleration
- **Components:**
  - Enthusiast level (Tiagra)- 9 speed gearing on a triple, low weight
**2000 WSD T**

**FRAMESET**

| MAIN TUBES | Alpha SL aluminum |
| STAYS | Alpha SL aluminum |
| FORK | Carbon Classic |
| HEADSET | STR Aheadset |
| Axle-crown length, mm | 345.0/345.0/345.0/370.0 |

**CONTROLS**

| HANDLEBAR | Alloy Road |
| STEM | Alloy quick change, direct connect |
| SHIFT LEVERS | Shimano 105 STI, Flite Deck compatible |
| BRAKE LEVERS | Integrated brake/shift |

**BIKE WEIGHT**

20.5 lb.
9.31 kg.

**GEAR**

| 30 | 42 | 52 |
| 61 | 86 | 106 |
| 57 | 79 | 98 |
| 52 | 73 | 91 |
| 49 | 69 | 85 |
| 43 | 60 | 75 |
| 39 | 54 | 67 |
| 35 | 49 | 61 |
| 32 | 45 | 55 |
| 29 | 41 | 51 |

**FIT**

| Frame | Size |
| Rider height | Inches |
| Handlebar | Width, mm |
| Stem | Length, mm |
| Crank | Length, mm |
| Seatpost | Length, mm |
| Steerer | Length, mm |

**Key features:**

**Rider:** Woman enthusiast or Century rider

**Frameset**

- Alpha SL aluminum- butted for low weight, high strength
- WSD geometry- fit and performance for a woman
- Carbon classic fork- more shock absorptive

**Wheels**

- Aurora rim- seamless braking, lightweight acceleration

**Components**

- Enthusiast level (Tiagra)- 9 speed gearing on a triple, low weight
- WSD fork, bars, saddle, crank length- fit and performance for a woman

**FIT**

| Frame | Size |
| Rider height | Inches |
| Handlebar | Width, mm |
| Stem | Length, mm |
| Crank | Length, mm |
| Seatpost | Length, mm |
| Steerer | Length, mm |

**BIKE WEIGHT**

20.5 lb.
9.31 kg.

**GEARING**

| 30 | 42 | 52 |
| 61 | 86 | 106 |
| 57 | 79 | 98 |
| 52 | 73 | 91 |
| 49 | 69 | 85 |
| 43 | 60 | 75 |
| 39 | 54 | 67 |
| 35 | 49 | 61 |
| 32 | 45 | 55 |
| 29 | 41 | 51 |

**WHEELSET**

| FRONT WHEEL | Shimano Tiagra hub, 32°, Aurora rim |
| REAR WHEEL | Shimano Tiagra hub, 32°, Aurora RDR rim |

**Spokes**

- DT 14G stainless
  - Front, mm: 273, 3x
  - Rear, mm: 268/268, 3x

**Colors**

Frost • Blue/Dark Blue decals
**1200**

**FRAMESET**
- **MAIN TUBES**: Alpha SL aluminum
- **STAYS**: Alpha SL aluminum
- **FORK**: Trek aluminum, bonded
- **HEADSET**: STR Aheadset
  - Axle-crown length, mm: 370
  - Stack height, mm: 23.0

**CONTROLS**
- **HANDLEBAR**: Alloy Road
  - Clamp diameter, mm: 26.0
- **STEM**: Alloy quick change, direct connect
  - Steerer clamp height, mm: 40.0
- **SHIFT LEVERS**: Shimano Tiagra STI Dual Control
- **BRAKE LEVERS**: Integrated brake/shift
- **GRIPS**: Powercork

**DRIVETRAIN**
- **FT DERAILLEUR**: Shimano Tiagra T
  - Cable routing: Down pull
  - Attachment: Braz-on type w/34.9mm clamp
- **RR DERAILLEUR**: Shimano Tiagra GS
- **CRANKSET**: Shimano Tiagra 52/42/30
  - Bolt hole circle, mm: 74/130
- **BB**: Shimano BB-UN40
  - Shell x axle, mm: 68 x 113, Square
- **CHAIN**: Shimano HG-53
  - Chain type: 9 speed
  - Chain length (links): 108
- **CASSETTE**: Shimano HG50 12-25, 9spd

**WHEELSET**
- **FRONT WHEEL**: Alloy, QR hub, 32°, Aurora rim
  - E.R.D., mm: 610
  - Rim strip: Velox 16mm
- **FRONT TIRE**: IRC Red Storm
  - Tire size: 700 x 25c
- **REAR WHEEL**: Alloy, QR hub, 32°, Aurora RDR rim
  - E.R.D., mm: 603
  - Rim strip: Velox 16mm
- **REAR TIRE**: IRC Red Storm
  - Tire size: 700 x 25c
- **SPOKES**: DT 14G stainless
  - Front, mm: 299, 3x
  - Rear, mm: 293/294, 3x
- **INNER TUBES**: Presta valve

**OTHER**
- **SEATPOST**: Bontrager Sport
  - Outer diameter, mm: 27.2
- **SADDLE**: SSM New Millenium
- **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, rack mounts
  - Stem shim from 1 to 1 1/8”

**COLORS**
- Starry Night • Silver/Dark Silver decals

**GEAR**
- 30 42 52
- 12 66 93 115
- 13 61 85 106
- 14 57 79 98
- 15 53 74 92
- 17 47 65 81
- 19 42 58 72
- 21 38 53 66
- 23 35 48 60
- 25 32 44 55

**BIKE WEIGHT**
- 20.3 lb.
- 9.22 kg.

**FIT**

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<th>Frame</th>
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<th>Crank</th>
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**Key features:**
- **Rider**: Enthusiast or Century rider
- **Frameset**: Alpha - low weight, high strength
- **Wheelset**: Aurora rims- seamless braking, lightweight acceleration
- **Components**: Enthusiast level (Sora)- 9 speed gearing on a triple, low weight
For 2002

The 2002 Alpha frame platform got a style update; round oversized down tube and traditional fastback seat stays. While we like the traditional look, we’re even more excited about the increase in frame rigidity and overall weight reduction.

Geometry

The Alpha geometry is a more forgiving road geometry, but still very close to what the racers ride. By forgiving, we mean it’s stable, and has more of a tendency to ride in a straight line. It’s less reactive to weight changes that would make a race bike turn, so you can relax more. And if you move around on the bike to sight-see, the bike won’t react as readily.

Ride

The forgiving geometry of the Alpha Road frame makes it a great bike for a beginning racer, or an experienced day tourer.

These frames provide excellent frame rigidity and good road sensitivity. However, they are not overly harsh. Our engineers designed the frame materials, tubing diameters, and wall thicknesses to ride smoothly, and to avoid the teeth rattling that some aluminum frame create.

Frame details

Alpha frames are aluminum.

Alpha frames provide 2 water bottle mounts, except the 43cm frames which have seat tubes which are too short.

Alpha cable routing uses shift pegs on the down tube for use of Shimano cable stops, for easy on-the-fly adjustment of the indexed shift systems. They use an open brake cable under the top tube, leaving a clean look. Although these frames are at home on the race course, they are also great for more recreational riding. We’ve added eyelets on the rear dropouts to provide mounting points for a rack or fenders. This way, the Alpha frames can be used for commuting or light touring.
**1000 T**

**FRAMESET**
- MAIN TUBES .... Alpha aluminum
- STAYS ............... Alpha aluminum
- FORK ................. Aluminum
  - Axle-crown length, mm: 370
- HEADSET .............. Steel
  - Size: 25.4/34.0/30.0
  - Stack height, mm: 24

**CONTROLS**
- HANDLEBAR ...... Alloy Ergo
  - Clamp diameter, mm: 25.4
- STEM ............... Alloy quick change, direct connect
  - Steerer clamp height, mm: 37.8
- SHIFT LEVERS ...... Shimano Sora STI Dual Control
- BRAKE LEVERS ...... Integrated brake/shift
- GRIPS ............... Cork

**DRIVETRAIN**
- FT DERAILEUR .... Shimano Sora T
  - Cable routing: Down pull
  - Attachment: 34.9 mm/1.3/8"
- RR DERAILLEUR .... Shimano Sora GS
- CRANKSET ......... SR Superbe 52/42/30
  - Bolt circle, mm: 74/130
- BB ................. Cartridge
  - Shell x axle, mm: 68 x 116, Square
- CHAIN ............. KMC Z-51
  - Chain type: 3/32"
  - Chain length (links): 108
- CASSETTE .......... Sun Race 11-28, 8spd

**GEARING**
- 30 42 52
- 11 72 101 125
- 12 66 93 115
- 14 57 79 98
- 16 50 69 86
- 18 44 62 76
- 21 38 53 66
- 24 33 46 57
- 28 28 40 49

**BIKE WEIGHT**
- 22.5 lb.
- 10.22 kg.

**WHEELSET**
- FRONT WHEEL ...... Alloy, QR hub, 32º, Vuelta Typhoon rim
  - E.R.D., mm: 610
  - Rim strip: Cloth
- FRONT TIRE .......... IRC Red Storm
  - Tire size: 700 x 25c
- REAR WHEEL ...... Alloy, QR hub, 32º, Vuelta Typhoon rim
  - E.R.D., mm: 603
  - Rim strip: Velox 16mm
- REAR TIRE .......... IRC Red Storm
  - Tire size: 700 x 25c
- SPOKES ............ 15G stainless
  - Front, mm: 293, 3x
  - Rear, mm: 290/292, 3x
- INNER TUBES ......... Presta valve

**OTHER**
- SEATPOST .......... Alloy micro-adjust
  - Outer diameter, mm: 27.2
- SADDLE ............. Trek Race
- BRAKES ............. Alloy dual pivot
- PEDALS ............. Nylon/alloy cage w/ clips and straps
  - Axle diameter: 9/16"
- SEAT BINDER .......... Alloy w/integral bolt
  - Inner diameter, mm: 31.8
- ADDITIONALS ......... 2 water bottle mounts, rack mounts

**COLORS**
- Pearl White • Blue/White decals

---

**Key features:**

**Rider:** Enthusiast or Century rider

**Frameset**
- Alpha - low weight, high strength

**Wheelset**
- Aurora rims - seamless braking, lightweight acceleration

**Components**
- Enthusiast level (Sora) - 9 speed gearing on a triple, low weight
New for 2002

The 2002 version of the XO-1 is all new. New tubeset with round oversized downtube, new fastback-style seatstays, new sizes with wider size range and new geometry.

Geometry

The XO-1 is a true cyclocross frame, and the new 2002 version is more racing oriented than in the past. It has quicker steering response for technical terrain, with a lower bottom bracket for easier mounts and a lower center of gravity. Compared to a regular road bike, it has a longer wheelbase, more relaxed head angle, and higher bottom bracket.

We used a traditional, high seat cluster design, and moved the cables to the top of the top tube (although there is cable routing for a down-pull front derailleur if so desired). This design leaves lots of room to shoulder the XO-1 on run-ups.

In addition to the centerline geometry, we've also looked from the other perspective. This frame has tons of tire clearance.

Ride

The steering geometry and wheelbase provide a stable ride off pavement. The higher bottom bracket (relative to a regular road bike) means more pedaling clearance in ruts or on sidehills. Increased tire clearance means less speed-robbing mud clogs. A 'Cross racer knows all this means better placing in races. It also makes the XO-1 a great all-round road bike capable of accepting both large tires and fenders for winter training, commuting, or touring.

Frame details

The XO-1 uses Trek's proprietary Alpha SL frame tubing. An oversize down tube creates a rigid structure between the bottom bracket and head tube, for frame stiffness and strength when you've left the pavement. 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 fittings, like dropouts and seatstay yoke, on the XO-1 are forged aluminum. Forging provides the highest structural integrity, while the low density of the aluminum keeps the bike light.

Although we chose to route the front derailleur on the top tube, we thoughtfully included a cable guide for traditional down tube cable routing. This allows you to choose from either a mountain bike front derailleur with top pull cabling, or a road bike derailleur which are only available with down-pull styling. Why the difference? Front derailleurs are designed to be used with specific chaining tooth quantities. A road front derailleur won't work it's best with smaller rings, and vice versa.

The XO-1 provides 2 water bottle mounts on all frame sizes.

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</tr>
</tbody>
</table>
**XO-1**

**FRAMESET**
- MAIN TUBES .......... Alpha SL aluminum
- STAYS ................. Alpha SL aluminum
- FORK ....................... X-Lite aluminum
- Axle-crown length, mm 403.0
- HEADSET ............. STR Aheadset
  - Size 25.4/34.0/30.0
  - Stack height, mm 23.0

**CONTROLS**
- HANDLEBAR .......... Bontrager Race
  - Clamp diameter, mm 26.0
- STEM ................. Bontrager Sport
  - Steerer clamp height, mm 41.0
- SHIFT LEVERS ....... Shimano Sora STI Dual Control
- BRAKE LEVERS ...... Integrated brake/shift
- GRIPS ............... Powercork

**DRIVETRAIN**
- FT DERAILLEUR .... Shimano Sora
  - Cable routing Down pull
- RR DERAILLEUR .... Shimano Sora
- CRANKSET .......... Shimano Sora 52/42/30
  - Bolt hole circle, mm 74/130
- BB ................. Shimano BB-UN40
  - Shell x axle, mm 68 x 113, Square
- CHAIN .......... HG-50
  - Chain type 3/32" x 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, 127tpi
  - 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, 127tpi
  - Tire size 700 x 32c
- SPOKES .............. DT 14G stainless
  - Front, mm 299, 3x
  - Rear, mm 293/294, 3x
- INNER TUBES ....... Presta valve

**BIKE WEIGHT**
- 23.5 lb.
- 10.67 kg.

**FIT**
- Frame Size 50 52 54 56 58
- Rider height Inches 66 68 69 69 72
- 14 59 83 103
- 15 55 77 96
- 17 49 68 85
- 19 44 61 76
- 21 39 55 68
- 23 36 50 62
- 26 32 45 55

**GEARING**
- 30 42 52
- 13 64 89 111
- 14 59 83 103
- 15 55 77 96
- 17 49 68 85
- 19 44 61 76
- 21 39 55 68
- 23 36 50 62
- 26 32 45 55

**COLORS**
- Starry Night • Blue/White decals

**Key features:**
- **Rider:** Cyclo-cross racer
- **Frameset:**
  - Alpha SL butted aluminum- light, strong, and efficient
  - Cyclo-cross geometry- stable handling off pavement
- **Wheelset:**
  - Aurora rims- seamless braking performance, light-weight acceleration
  - Bontrager Jones CX tires- traction and handling
- **Components:**
  - Cross group (Custom Sora)- Off road gearing with bar end shifters, canti brakes
  - Ahead type steering system- easy adjustment, low weight, high strength
New for 2001 (not)
The 520 is a Trek classic. We've been making this frame for quite a few years, and wouldn't dare change it. In the world of bike touring, this is a very refined design.

Geometry
The 520 has true long distance, self-supported touring geometry. It is very stable, with relaxed steering that feels just right when the bike is fully loaded. It has a low bottom bracket to keep the center of gravity low, and also to make it easier to mount the bike. Very long chainstays provide lots of room for a rack and panniers, without compromising heel clearance.

Ride
Thanks to the true long-distance design of the 520, it's very comfortable and stable. While it fits the classic touring mold, we use slightly larger diameter frame tubes than the bikes we built in the 70's. This makes the 520 more stable when fully loaded, when some bikes get 'whippy'.

Frame details
The 520 has all the amenities of a true tourer. It has full braze-ons for 3 water bottles, front and rear racks, and even fenders. Cantilever posts allow the use of more powerful brakes, which provide a very comforting feeling if you are sitting on a fully loaded bike at the top of a long hill.

<table>
<thead>
<tr>
<th>Frame sizes</th>
<th>17</th>
<th>19</th>
<th>21</th>
<th>23</th>
<th>25</th>
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<tr>
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<td>71.0</td>
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<tr>
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<td>764</td>
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</table>
Key features:

Rider: Long distance, self-supported Tourer

Frameset
- Oversize Cro-Moly: avoids unwanted frame flex with full panniers
- Touring geometry: stable, comfortable, and lots of room for heel clearance with panniers, tire clearance with fenders

Wheelset
- 36 spoke wheels: extra durability because a loaded bike is heavy and less maneuverable, so road obstacles can be hard to avoid

Components
- Touring: 36 spoke wheels for durability, wide range gearing for hills, powerful brakes, comfortable saddle, clipless pedals with mini-platform, rear rack included
**Geometry**

Introduced for the 2000 model year, the Hilo is a full-fledged Tri-bike, not a redressed road racer. It has good steering feel when you’re on the aero bars, even with the lighter 650c wheels. The very steep seat tube allows you to open the angle between your thighs and torso, so you can comfortably stay aero for long stretches. A good aero tuck is worth a couple MPHs!

**Ride**

Our engineering staff includes some good triathletes, and they know how important it is to come off the bike refreshed and ready to run. So the Hilo is comfortable. Still, it has excellent efficiency thanks to the Alpha SLR frame tubing, so it’s very fast.

**Frame details**

The Hilo has a large, wing shaped down tube and a thin mono-stay to help cheat the wind. We even went the extra mile to run the cables inside the frame. Coupled to a wing-shaped carbon fork, the Hilo really slices the air.

Although they may not be aerodynamic, the Hilo has 2 water bottle mounts. You can’t go fast if you’re dehydrated.

The Hilo uses Trek’s proprietary Alpha SLR frame tubing.

![Frame details table]

<table>
<thead>
<tr>
<th>Frame sizes</th>
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<td>39.1</td>
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## Hilo 2000

### FRAMESET

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Beta SLR aluminum</th>
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<tbody>
<tr>
<td>STAYS</td>
<td>Beta SLR aluminum</td>
</tr>
<tr>
<td>FORK</td>
<td>Carbon Aero 650c</td>
</tr>
<tr>
<td>HEADSET</td>
<td>Cane Creek S-6 Aheadset, alloy</td>
</tr>
</tbody>
</table>

### CONTROLS

| HANDLEBAR       | Bontrager Race, bullhorn w/Syntace Streamliner clamps |
| STEM            | Bontrager Race |
| SHIFT LEVERS    | Shimano Dura-Ace bar ends |
| BRAKE LEVERS    | Dia-Compe B/188 Aero |
| GRIPS           | Powercork |

### DRIVETRAIN

| FT DERAILLEUR   | Shimano Ultegra |
| RR DERAILLEUR   | Shimano Ultegra |
| CRANKSET        | Truvativ Elii 5542 |
| BB              | Truvativ Isis |
| CHAIN           | Shimano HG-92 |
| CASSETTE        | Shimano Ultegra 11-21, 9sp |

### GEARING

| 42 | 55 |
| 11 | 94 123 |
| 12 | 86 113 |
| 13 | 79 104 |
| 14 | 74 96 |
| 15 | 69 90 |
| 16 | 64 84 |
| 17 | 61 79 |
| 19 | 54 71 |
| 21 | 49 64 |

### BIKE WEIGHT

19.0 lb.  
8.63 kg.

### WHEELSET

| FRONT WHEEL     | Bontrager X-Lite, 20° |
| RR WHEEL        | Bontrager X-Lite, 24° |

### OTHER

| SEATPOST        | Thomson Elite |
| SADDLE          | SSM Era, Ti/leather |
| BRAKES          | Shimano Ultegra |
| PEDALS          | not supplied |
| SEAT BINDER     | Aluminum w/integral bolt |
| ADDITIONALS     | 2 water bottle mounts, rack mounts |
| COLORS          | Starry Night • Silver/Dark Silver decals • Carbon fork |

### Key features:

**Rider:** Triathlete, time trial, or flatland speed merchant

**Frameset**
- Alpha SLR butted aluminum- light, strong, and efficient
- True Tri-bike geometry- good handling in aero position

**Wheelset**
- Bontrager Paired Spoke Technology- very aero

**Components**
- Race group (Ultema)- Pro performance at an affordable price
- Aero bars- comfortable position while cheating the wind
## Hilo 1000

### FRAMESET

<table>
<thead>
<tr>
<th>MAIN TUBES</th>
<th>Alpha SLR aluminum</th>
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<tbody>
<tr>
<td>STAYS</td>
<td>Alpha SLR aluminum</td>
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</tbody>
</table>

*Frame weight: 2.9 lb (1.32 gm)*

<table>
<thead>
<tr>
<th>FORK</th>
<th>Carbon Aero 650c</th>
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</thead>
<tbody>
<tr>
<td>HEADSET</td>
<td>Cane Creek C-1 Aheadset</td>
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</tbody>
</table>

*Size: 22.2/30.2/32.6.4*

*Stack height: 26.5*

### CONTROLS

<table>
<thead>
<tr>
<th>HANDLEBAR</th>
<th>Bontrager Race, bullhorn w/Syntace Streamliner clipons</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM</td>
<td>Bontrager Race</td>
</tr>
<tr>
<td>SHIFT LEVERS</td>
<td>Shimano Dura-Ace bar ends</td>
</tr>
<tr>
<td>BRAKE LEVERS</td>
<td>Dia-Compe BL188 Aero</td>
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<tr>
<td>GRIPS</td>
<td>Powercork</td>
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### DRIVETRAIN

<table>
<thead>
<tr>
<th>FT DERAILLEUR</th>
<th>Shimano 105</th>
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<tbody>
<tr>
<td>RR DERAILLEUR</td>
<td>Shimano 105</td>
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<tr>
<td>CRANKSET</td>
<td>TruVativ Elita 55/42</td>
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<tr>
<td>BB</td>
<td>TruVativ Isis</td>
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<tr>
<td>CHAIN</td>
<td>Shimano HG-53</td>
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*Chain type: 9 speed*

*Chain length (links): 106*

### CASSETTE

| Shimano Ultegra 12-23, 9spd |

### GEARING

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<tbody>
<tr>
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<td>13   79 104</td>
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<td>14   74 96</td>
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<td>15   69 90</td>
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<td>16   64 84</td>
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<td>19   54 71</td>
</tr>
<tr>
<td>21   49 64</td>
</tr>
<tr>
<td>23   45 59</td>
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### BIKE WEIGHT

*20.1 lb. 9.13 kg.*

### WHEELSET

<table>
<thead>
<tr>
<th>FRONT WHEEL</th>
<th>Bontrager Select Road, 20° E.R.D., mm 539</th>
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<tbody>
<tr>
<td></td>
<td>Rim strip Velox 16mm</td>
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<tr>
<td>FRONT TIRE</td>
<td>IRC Triathlonal, 127tpi</td>
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<tr>
<td></td>
<td>Tire size 650 x 25c</td>
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<tr>
<td>REAR WHEEL</td>
<td>Bontrager Select Road, 24° E.R.D., mm 549</td>
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<tr>
<td></td>
<td>Rim strip Velox 16mm</td>
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<tr>
<td>REAR TIRE</td>
<td>IRC Triathlonal, 127tpi</td>
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<tr>
<td></td>
<td>Tire size 650 x 25c</td>
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<tr>
<td>SPOKES</td>
<td>DT 14/15G butted stainless</td>
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<tr>
<td></td>
<td>Front, mm 252, Radial</td>
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<tr>
<td></td>
<td>Rear, mm 268/268, 2x</td>
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<tr>
<td>INNER TUBES</td>
<td>Presta valve, 40mm stem</td>
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### OTHER

<table>
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<tr>
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<th>Bontrager Select Outer diameter, mm 27.2</th>
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<tbody>
<tr>
<td>SADDLE</td>
<td>Selle San Marco New Millenium, CrMo/leather</td>
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<tr>
<td>BRAKES</td>
<td>Shimano 105</td>
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<tr>
<td>PEDALS</td>
<td>-not supplied-</td>
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<td>Axle diameter 9/16&quot;</td>
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<td>SEAT BINDER</td>
<td>Alloy w/integral bolt</td>
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<td>Inner diameter, mm 35.0</td>
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<tr>
<td>ADDITIONALS</td>
<td>2 water bottle mounts, rack mounts</td>
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<tr>
<td></td>
<td>Stem shim from 1&quot; to 1 1/8&quot;</td>
</tr>
</tbody>
</table>

### COLORS

*Dusk • White/Black decals • Dusk-to-Carbon fade fork*

### Key features:

**Rider: Triathlete, time trial, or flatland speed merchant**

**Frameset**

*Alpha SLR butted aluminum- light, strong, and efficient*

*True Tri-bike geometry- good handling in aero position*

**Wheelset**

*Bontrager Paired Spoke Technology- very aero*

**Components**

*Race group (105)- Race performance at an affordable price*

*Aero bars- comfortable position while cheating the wind*
New for 2002
Trek is re-entering the tandem market. This is an entirely new frameset which meets the needs of the performance tandem enthusiast in fit and function.

Geometry
Using what we know about bike fit, garnered over years of making lots of great bikes, the tandem was designed to replicate the fit from those bikes. Essentially what we did was make the captain's sizing mimic the positions of those found on riders from 5'7" to 6'2". Then we made the stoker's position as adjustable as possible, fitting from just under 5' to about 5'11".

Ride
The main performance issue with a tandem is frame rigidity and handling. We used FEA (Finite element Analysis), a powerful computer-aided design program, to find which tube shapes and sections would best address the needs to the riders. Our unique boom-tube shape is an obvious visual example. What you can't see under the paint is the unique wall shapes that make this tube the stiffest in the market for its intended use.

So what does all this mean? Pound for pound, we think you'll find our Trek tandem is the best riding tandem on the market, regardless of cost.

Frame details
Our tandems are designed to be as versatile as possible. As such, they have brake mounts for road calipers, cantilever or direct pull brakes, discs, or drums.

We know that some tandem riders like to do a lot of miles, so we put 4 water bottle mounts on every size.

We chose a headset size of 1 1/8" to allow the owner as much choice in components as possible. With modern technology, this systems is plenty strong and durable, plus there are lots of forks, headsets, and stems to choose from at your local dealer. The lack of custom parts means a user-friendly experience over the life of the bike.

For the mechanic
Stoker stem adjustment
Tighten seatpost clamp bolts to 100-120 lb•in (11.3-13.6 Nm).
Tighten stem extension clamp bolts to 120-140 lb•in (13.6-15.8 Nm).

Timing chain
The timing chain connects and synchronizes the two pedal cranks on the tandem. The tension of this chain is adjustable and must be correct for safety and to extend the life of the drivetrain parts. When grasped in the middle of the chain run between the front and rear sprockets, there should be a total of 1/2 to 1 inch (12-25 mm) total vertical movement.

To adjust the timing chain tension, identify the expander bolt on the captain's bottom bracket eccentric. Loosen this bolt several turns. Hold the eccentric with an allen wrench and rotate the eccentric until the desired chain tension is achieved. Retighten the expander bolt to 75-100 lb•in (8.5-11.3 Nm).
T2000

FRAMESET

MAIN TUBES ....... ZR9000 aluminum
STAYS ............... ZR9000 aluminum
FORK ................. Tandem Cro-Moly
HEADSET ........... Cane Creek 5-6 Aheadset

CONTROLS

HANDLEBAR .......... Bontrager Race Lite/ Bontrager Race CX
STEM ................. Bontrager Race / Alloy adjustable
SHIFT LEVERS ....... Shimano Ultegra STI, Flite Deck compatible
BRAKE LEVERS ...... Integrated brake/shift
GRIPS ............... Powercork

DRIVETRAIN

FT DERAILLEUR .... Shimano Ultegra T
RR DERAILLEUR .... Shimano XTR SGS
CRANKSET .......... Shimano Ultegra 53/42/30
BB ................. Shimano Ultegra
CHAIN ............... Shimano HG-93 / PC59
CASSETTE .......... Shimano C900 11-34, 9sp

GEARING

| 30 | 42 | 53 |
| 11 | 74 | 103,130 |
| 13 | 62 | 87, 110 |
| 15 | 54 | 76, 95 |
| 17 | 48 | 67, 84 |
| 20 | 41 | 57, 72 |
| 23 | 35 | 49, 62 |
| 26 | 31 | 44, 55 |
| 30 | 27 | 38, 48 |
| 34 | 24 | 33, 42 |

FIT

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Rider height</th>
<th>Handlebar</th>
<th>Stem</th>
<th>Crank</th>
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WHEELSET

FRONT WHEEL ...... Bontrager Race Tandem, 24°
FRONT TIRE ......... Continental Gator
REAR WHEEL ......... Bontrager Race Tandem, 24°
REAR TIRE ......... Continental Gator
SPOKES ............ DT Aero stainless
GRIPS ............... Powercork

OTHER

SEATPOST .......... Bontrager Race / alloy suspension
SADDLE ............. Bontrager FS 2000 / 2000 WSD
BRAKES ............. Avid Shorty 6 cantilevers
PEDALS ............. not supplied-
ADDITIONALS ...... 4 water bottles

COLORS
Rainforest • White/Gold decals

Key features:

Riders: A pair; tourists, century riders, or even racers
Frameset
ZR9000 butted aluminum- light, strong, and effi- cient
Geometry for fit- sized to the captain with maxi- mum stoker adjustability
Wheelset
Bontrager tandem wheelset- engineered durability
Components
Tandem designed- extra strong wheels, special tandem cranks (and gearing)
Designed for fit- adjustable stoker stem and 350mm seatpost

2002 Trek Technical Manual
**T1000**

### FRAMESET

- MAIN TUBES: ZR9000 aluminum
- STAYS: ZR9000 aluminum
- FORK: Tandem Cro-Moly
- HEADSET: SAS A Aheadset, alloy

### CONTROLS

- HANDLEBAR: Bontrager Select
- STEM: Bontrager Sport / Alloy adjustable
- SHIFT LEVERS: Shimano R400 STi
- BRAKE LEVERS: Alloy, direct pull
- GRIPS: Oasis, dual density

### DRIVETRAIN

- FT DERAILEUR: Shimano Tiagra T
- RR DERAILEUR: Shimano Deore XT SGS
- CRANKSET: Shimano 105 52/42/30
- BB: Shimano BB-UN52
- CHAIN: Shimano HG-72 / PC59
- CASSETTE: Shimano C900 11-34, 9spd

### GEARING

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<th>Size</th>
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<td>34</td>
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### WHEELSET

- FRONT WHEEL: Shimano XT Tandem hub, 48°, Btrg Clyde rim
  - E.R.D.: 604
  - Rim strip: Velox 22mm
- FRONT TIRE: Bontrager Invert
  - Tire size: 700 x 38c
- REAR WHEEL: Shimano XT Tandem hub, 48°, Btrg Clyde rim
  - E.R.D.: 604
  - Rim strip: Velox 22mm
- REAR TIRE: Bontrager Invert
  - Tire size: 700 x 38c
- SPOKES: DT 14G stainless
  - Front: 289, 4s
  - Rear: 289/289, 4s
- INNER TUBES: Presta valve

### OTHER

- SEATPOST: Bontrager Select / alloy suspension
  - Outer diameter: 27.2
- SADDLE: Bontrager FS 2000 / 2000 WSD
- BRAKES: Avid Single Digit 5, linear pull
- PEDALS: Alloy platform
  - Axle diameter: 9/16"
- SEAT BINDER: Alloy w/integral bolt
  - Inner diameter: 35.0
- ADDITIONALS: 4 water bottles

### COLORS

- Rainforest • White/Gold decals

---

**Key features:**

- **Riders:** A pair; tourists, century riders, or just for fun
- **Frameset:** ZR9000 butted aluminum- light, strong, and efficient
  - Geometry for fit- sized to the captain with maximum stoker adjustability
- **Wheelset:** Bontrager tandem wheelset- engineered durability
- **Components:** Tandem designed- extra strong wheels, special tandem cranks (and gearing)
  - Designed for fit- adjustable stoker stem and 350mm seatpost
Intermediate Bikes

**New for 2002**

Intermediate bikes are for those who need a size between youth and full-size. For 2002, we’ve added a road bike to this range of bikes.

**Geometry**

These frames use geometries which deliver performance for a smaller rider. Standover is maximized to allow a younger rider to get on early, and ride it for a longer period of time as they grow.

On the mountain bikes, the head angles are slightly slackened to allow good off-road stability for a rider with less upper body strength.

**Ride**

These are real 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**

The Mt. Track 240 and 1000KDR use Alpha aluminum frame technology.

The other bikes use hi-tensile steel with a Cro-Moly seat tube. The advantage of Cro-Moly steel is higher tensile strength and fatigue resistance; it’s no more rigid than good hi-tensile steel. For this reason, we’ve only used Cro-Moly in the seat tube, which can see lots of flexing as the seatpost quick release is used. For the rest of the bike, we’ve focused on providing the best ride for the cost. By carefully designing the frame geometry, tubing wall thicknesses, and tubing diameters, we’ve managed to get a lot of ride from a less expensive frame material. This allows riders a viable high quality alternative to chain store bikes which don’t ride nearly as well.

<table>
<thead>
<tr>
<th>Frame details</th>
<th>1000KDR</th>
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Y 24

**FRAMESET**

- **MAIN TUBES** . . . . . Alpha aluminum
- **STAYS** . . . . . . . Hi Tensile steel
- **FORK** . . . . . . . . RST

**REAR SHOCK** . . . . Aintec AB-7000

- Stroke: 30mm
- Length: 165mm
- Width: 24mm
- Eyes: 6mm

**HEADSET** . . . . . . Steel

- Size: 25.4/34.0/30.0
- Stack height, mm: 34.5

**CONTROLS**

- **HANDLEBAR** . . . . . Steel
  - Clamp diameter, mm: 25.4
- **STEM** . . . . . . . Quick change, quill
  - Steerer clamp height, mm
- **SHIFT LEVERS** . . . . SRAM Centera Halfpipe
- **BRAKE LEVERS** . . . . Alloy, direct pull
- **GRIPS** . . . . . . . Kraton

**DRIVETRAIN**

- **FT DERAILLEUR** . . . . Shimano Altus
  - Cable routing: Down pull
  - Attachment: 31.8 mm/1 1/4"
- **RR DERAILLEUR** . . . . Shimano TY-40 GS
- **CRANKSET** . . . . . . SunRace TK-1 42/34/24
  - Bolt hole circle, mm: Riveted
  - Shell x axle, mm: 73 x 121, Square
- **BB** . . . . . . . Three-piece type
  - Shell x axle, mm: 73 x 121, Square
- **CHAIN** . . . . . . . KMC Z-51
  - Chain type: 3/32"
  - Chain length (links): 104
- **CASSETTE** . . . . . . HG72 13-28, 7spd

**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

**FIT**

- **Frame**
  - Size: 15"  
- **Rider height**
  - Inches: 60
  - Cm: 153
- **Handlebar**
  - Width, mm: 560
- **Stem**
  - Length, mm: 70
  - Angle: 40
- **Crank**
  - Length, mm: 162
- **Seatpost**
  - Length, mm: 300
- **Steerer**
  - Length, mm: 146

**WHEELSET**

- **FRONT WHEEL** . . . . . Alloy, nutted hub, 32°, 3/8 axle, Al alloy rim
  - E.R.D., mm: 499
  - Rim strip: Rubber
- **FRONT TIRE** . . . . . Innova MTB
  - Tire size: 24 x 2.1
- **REAR WHEEL** . . . . . . Alloy, nutted hub, 32°, 3/8 axle, Al alloy rim
  - E.R.D., mm: 499
  - Rim strip: Rubber
- **REAR TIRE** . . . . . Innova MTB
  - Tire size: 24 x 2.1
- **SPokes** . . . . . . . . . . . . 14G UCP
  - Front, mm: 242, 4x
  - Rear, mm: 240/241, 4x
- **INNER TUBES** . . . . . Schraeder valve

**OTHER**

- **SEATPOST** . . . . . . . . . . . . . . . . Alloy
  - Outer diameter, mm: 30.4
- **SADDLE** . . . . . . . . . . Trek padded
- **BRAKES** . . . . . . . . . . Alloy direct pull
- **PEDALS** . . . . . . . . . . Platform
  - Axle diameter: 9/16"
- **SEAT BINDER** . . . . . . . . . . Quick release, 47mm
  - Inner diameter, mm: 31.8
- **ADDITIONALS** . . . . . . . . . . . . . . . . . . . . . . Chainring guard

**COLORS**

- Bright Silver/Candy Blue • Whiter/Red decals • Bright Silver fork

---

**Key features:**

- **Rider:** Rough riding kid or athletic new rider
- **Frameset:** Y design- Our most popular suspension design ever
  - URT- great overall performance
- **Wheelset:**
  - Alloy rims- light, with better stoping
  - Bontrager tires- all-round treads
- **Components:**
  - Recreational level- coil spring suspension, 21 speeds
  - make mountain biking easy, more comfortable
  - Direct Pull brakes- excellent stopping
Mt. Track 240

FRAMESET
MAIN TUBES ....... Alpha aluminum
STAYS ............ Alpha aluminum
FORK ............. RST

| Travel, mm | 63 |
| E.R.D., mm | 388 |

HEADSET ............ Aheadset

| Size | 25.4/34.0/30.0 |
| Stack height, mm | 30.0 |

CONTROLS
HANDLEBAR ........... Bontrager Crowbar Sport

| Clamp diameter, mm | 25.4 |
| Stem width, mm | 40 |

STEM ............ Alloy quick change, direct connect

| Steerer clamp height, mm | 30.0 |

SHIFT LEVERS ...... SRAM Centera Halfpipe

BRACE LEVERS ...... Alloy, direct pull

GRIPS ............ Kraton

DRIVETRAIN
FT DERAILLEUR .... Shimano Acera-X

| Cable routing | Down pull |
| Attachment | 34.9 mm/ 1 3/8" |

RR DERAILLEUR .... Shimano Deore SGS

CRANKSET ........ SunRace TK1 42/34/24

| Bolt hole circle, mm | Riveted |
| Shell x axle, mm | 73 x 121, Square |

BB ............ Three-piece type

CHAIN ............ KMC Z51

| Chain type | 3/32" |
| Chain length (links) | 104 |

CASSETTE ........ Sun Race 11-28, 8 spd

WHEELSET
FRONT WHEEL ...... Alloy, QR hub, 32°, Aluminum alloy rim

| E.R.D., mm | 499 |
| Rim strip | Rubber |

FRONT TIRE .......... Innovia MTB

| Tire size | 24 x 2.1 |

REAR WHEEL ...... Alloy, QR hub, 32°, Aluminum alloy rim

| E.R.D., mm | 499 |
| Rim strip | Rubber |

REAR TIRE ...... Innovia MTB

| Tire size | 24 x 2.1 |

SPOKES ............. 14G UCP

| Front, mm | 242.4 |
| Rear, mm | 240.24 |

INNER TUBES ...... Schraeder valve

OTHER
SEATPOST ............ Alloy micro-adjust

| Outer diameter, mm | 27.2 |

SADDLE ............ Trek padded

BRAKES ............ Alloy direct pull

PEDALS ............ Alloy platform

| Axle diameter | 9/16" |

SEAT BINDER ...... Quick release

| Inner diameter, mm | 31.8 |

ADDITIONALS ..... 

COLORS
Gloss Black/Bright silver • White/Red decals • Gloss Black fork

GEARING

| 24 | 34 | 42 |
| 11 | 52 | 73 | 90 |
| 13 | 44 | 62 | 76 |
| 15 | 38 | 54 | 66 |
| 17 | 33 | 47 | 58 |
| 20 | 28 | 40 | 50 |
| 23 | 25 | 35 | 43 |
| 26 | 22 | 31 | 38 |
| 30 | 19 | 27 | 33 |

FIT

| Frame | Size |
| Rider height | Inches |
| Handlebar Width, mm | 152 |
| Stem Length, mm | 70 |
| Crank Length, mm | 162 |
| Seatpost Length, mm | 300 |
| Steerer Length, mm | 175 |

Key features:

Rider: Young racer or athletic new rider
Frameset
Alpha aluminum- strong and light

Wheelset
Alloy rims- light, with better stoping
Bontrager tires- all-round treads

Components
Kids’ sport level- 24 speeds for any terrain
Direct Pull brakes- excellent stopping
Mt. Track 230

FRAMESET

MAIN TUBES ....... Hi Tensile steel
STAYS .............. Hi Tensile steel
FORK ............... RST

| Travel, mm | 60 |
| Axle-crown length, mm | 493 |

HEADSET .......... Steel

| Size | 25.4/34.0/30.0 |
| Stack height, mm | 34.5 |

CONTROLS

HANDLEBAR ........ Steel

| Clamp diameter, mm | 25.4 |

STEM  ............... Quick change, quill

| Steerer clamp height, mm | 31.8 mm/ 1 1/4" |

SHIFT LEVERS ...... SRAM Centera Halfpipe

BRAKE LEVERS ...... Alloy, direct pull

GRIPS ............... Kraton

DRIVETRAIN

FT DERAILEUR .... Shimano Altus

| Cable routing | Down pull |
| Attachment | 31.8 mm/ 1 1/4" |

RR DERAILEUR .... Shimano Tourney TY40

CRANKSET .......... SunRace TK-1 42/34/24

| Bolt hole circle, mm | Riveted |
| Axle-crown length, mm | 403 |

BB ................. Three-piece type

| Shell x axle, mm | 70 x 3L, Square |
| Chain type | 3032" |

CHAIN .......... KMC Z-51

| Chain length (links) | 106 |

CASSETTE .......... HG72 13-28, 7spd

WHEELSET

FRONT WHEEL ...... Alloy, nutted hub, 32º, 3/8 axle, Aluminum alloy rim

| E.R.D., mm | 499 |
| Rim strip | Rubber |

FRONT TIRE ........ Innova MTB

| Tire size | 24 x 2.1 |

REAR WHEEL ...... Alloy, nutted hub, 32º, 3/8 axle, Aluminum alloy rim

| E.R.D., mm | 499 |
| Rim strip | Rubber |

REAR TIRE .......... Innova MTB

| Tire size | 24 x 2.1 |

SPOKES .......... 14G UCP

| Front, mm | 242, 4x |
| Rear, mm | 240/241, 4x |

INNER TUBES ......... Schraeder valve

OTHER

SEATPOST .......... Alloy

| Outer diameter, mm | 29.2 |

SADDLE ............ Trek padded

BRAKES .......... Alloy direct pull

PEDALS .......... Platform

| Axle diameter | 9/16" |
| Inner diameter, mm | 31.8 |

ADDITIONALS ....... Quick release

COLORS

Candy Blue/Silver • Red/Black decals • Candy Blue fork

Key features:

Rider: Aggressive young singletracker or athletic new rider

Frameset

Steel strong and durable

Wheelset

Alloy rims- light, with better stoping
Bontrager tires- all-round treads

Components

Kids’ recreational level- Suspension fork for comfort and control, 21 speeds for the hills
Mt. Track 220

FRAMESET

MAIN TUBES .......... Hi Tensile steel
STAYS ............... Hi Tensile steel
FORK .................. Hi Tensile steel
HEADSET ............ Steel

Axle-crown length, mm 361

Stack height, mm 345

CONTROLS

HANDLEBAR .......... Steel

Clamp diameter, mm 25.4

STEM .................. Quick change, quill

Steeer clamp height, mm

SHIFT LEVERS ...... SRAM Centera Halfpipe

BRAKE LEVERS ...... Alloy, direct pull

GRIPS ................. Kraton

DRIVETRAIN

FT DERAILEUR .... Shimano Altus

Cable routing Down pull

Attachment 31.8 mm/1 1/4"

RR DERAILEUR .... Shimano Tourney TY40

CRANKSET .......... SunRace TK-1 42/34/24

Bolt hole circle, mm Riveted

BB ................. Three-piece type

Shell x axle, mm 70 x 3L, Square

CHAIN .............. KMC Z-51

Chain type 3/32"

Chain length (links) 106

CASSETTE .......... HG72 13-28, 7spd

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

30.0 lb.
13.62 kg.

WHEELSET

FRONT WHEEL ...... Alloy, nutted hub, 32°, 3/8 axle, Al alloy rim

E.R.D., mm 499

Rim strip Rubber

FRONT TIRE ........ Innova MTB

Tire size 24 x 2.1

REAR WHEEL ....... Alloy, nutted hub, 32°, 3/8 axle, Al alloy rim

E.R.D., mm 499

Rim strip Rubber

REAR TIRE .......... Innova MTB

Tire size 24 x 2.1

SPOKES ............ 14G UCP

Front, mm 242, 4x

Rear, mm 240-241, 4x

INNER TUBES ........ Schraeder valve

OTHER

SEATPOST .......... Alloy

Outer diameter, mm 29.2

SADDLE ............ Trek padded

BRAKES .......... Alloy direct pull

PEDALS .............. Platform

Axle diameter 9/16"

SEAT BINDER ......... Quick release

Inner diameter, mm 31.8

ADDITIONALS ...... Rear derailleur guard, kickstand

COLORS

Green/Black (boys)
Black/Silver (boys)
Purple/White (girls)
Light blue (girls)

Key features:

Rider: Aggressive young singletracker or athletic new rider

Frameset

Steel strong and durable

Wheelset

Alloy rims- light, with better stoping
Bontrager tires- all-round treads

Components

Kids’ recreational level- 21 speeds
Direct Pull brakes- excellent stopping

FIT

Frame Size 138 136
Rider height Inches 59 59

Cm 149 149

Handlebar Width, mm 560 560

Stem Length, mm 70 70

Angle 40 40

Crank Length, mm 162 162

Seatpost Length, mm 300 300

Steerer Length, mm 126 126
### GEARING

<table>
<thead>
<tr>
<th>1000 KDR</th>
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<tr>
<td>30 42 30</td>
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### FIT

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<td>Length, mm</td>
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</table>

### 1000 KDR

#### FRAMESET
- **MAIN TUBES**: Alpha aluminum
- **STAYS**: Alpha aluminum
- **FORK**: Aero Cro-Moly

<table>
<thead>
<tr>
<th>Headset</th>
<th>Aheadset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>25.4/34.0/30.0</td>
</tr>
<tr>
<td>Stack height, mm</td>
<td>36</td>
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</tbody>
</table>

#### CONTROLS
- **HANDLEBAR**: Alloy
- **STEM**: Alloy quick change, quill
- **SHIFT LEVERS**: Shimano Sora STI Dual Control
- **BRAKE LEVERS**: Integrated brake/shift
- **GRIPS**: Cork

#### DRIVETRAIN
- **FT DERRAILLEUR**: Shimano Sora
- **RR DERRAILLEUR**: Shimano Sora
- **CRANKSET**: Cyclone 50/42/30
- **BB**: Cartridge
- **CHAIN**: KMC Z-51
- **CASSETTE**: Sun Race 11-28, 8spd

#### WHEELSET
- **FRONT WHEEL**: Alloy, QR hub, °, Aluminum alloy rim
- **FRONT TIRE**: Kenda K191
- **REAR WHEEL**: Alloy, QR hub, °, Aluminum alloy rim
- **REAR TIRE**: Kenda K191
- **SPOKES**: 15G stainless
- **INNER TUBES**: Presta valve

#### OTHER
- **SEATPOST**: Alloy micro-adjust
- **SADDLE**: Trek padded
- **BRAKES**: Alloy dual pivot
- **PEDALS**: Alloy w/ clips and straps
- **SEAT BINDER**: Inner diameter, mm

#### COLORS
- Candy Blue

### Key features:

**Rider**: Aggressive young singletracker or athletic new rider

**Frameset**: Steel strong and durable

**Wheelset**: Alloy rims- light, with better stoping
Bontrager tires- all-round treads

**Components**: Kids’ recreational level- 21 speeds
Direct Pull brakes- excellent stopping
BMX

New for 2002
BMX continues to evolve, and so do our frames. Mostly we apply small tweaks and details, but to stay on top it has to be kept current.

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 Trek 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 Trek BMX bike hits the market.

Our Jumping bikes, the TR series, 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 frame (T.I.) is aluminum for lower weight, but we still built it beefy for competition. The downtube is slightly smaller in diameter to allow a slight flex for excellent handling on the berms, but it's still stiff enough to land smoothly after jumping a double.

Our Vert series features 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.
## T.I. 1 / Wade Bootes

### FRAMESET
- **MAIN TUBES**: Alpha aluminum
- **STAYS**: Alpha aluminum
- **FORK**: Trek Race Cro-Moly, 1 3/8" tapered

### HEADSET
- **Type**: Tioga threadless
- **Size**: 25.4/34.0/30.0
- **Stack height**: 25.5

### CONTROLS
- **HANDLEBAR**: Trek BMX Cro-Moly
- **STEM**: Trek Jaws BMX, direct connect
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Bontrager BMX

### DRIVETRAIN
- **CRANKSET**: Trek 3-piece forged Cro-Moly, 44T
- **BB**: One-piece type, 44T
- **CHAIN**: KMC 410

### WHEELSET
- **FRONT WHEEL**: Trek, alloy hub, 36°, 3/8" axle, Aluminum alloy rim
- **FRONT TYRE**: Knobby, square style
- **REAR WHEEL**: Trek, alloy hub, 36°, 3/8" axle, Aluminum alloy rim
- **REAR TYRE**: Knobby, square style

### OTHER
- **SEATPOST**: Alloy
- **SADDLE**: Bontrager FS10 BMX
- **BRAKES**: Alloy direct pull
- **PEDALS**: Alloy BMX

### ADDITIONALs

### COLORS
- Bright Silver/Candy Blue • White/Black decals • Gloss Black fork

### GEARING
- **44**
- **16 55**

### FIT
<table>
<thead>
<tr>
<th>Frame</th>
<th>Pro XL</th>
</tr>
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<tbody>
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<td>Handlebar Width, mm</td>
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<td>350</td>
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<tr>
<td>Steerer Length, mm</td>
<td>163</td>
</tr>
</tbody>
</table>

## Vert 1

### FRAMESET
- **MAIN TUBES**: Hi Tensile steel
- **STAYS**: Hi Tensile steel
- **FORK**: 1 3/8" tapered

### HEADSET
- **Type**: Tioga threadless
- **Size**: 25.4/34.0/30.0
- **Stack height**: 25.5

### CONTROLS
- **HANDLEBAR**: Trek Freestyle
- **STEM**: Trek Jaws BMX
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Bontrager dual density

### DRIVETRAIN
- **CRANKSET**: One-piece type, 44T
- **BB**: One-piece type
- **CHAIN**: KMC 410

### WHEELSET
- **FRONT WHEEL**: Steel hub, 48°, 3/8" axle, Aluminum alloy rim
- **FRONT TYRE**: Trek Freestyle
- **REAR WHEEL**: Steel hub, 48°, 3/8" axle, Aluminum alloy rim
- **REAR TYRE**: Trek Freestyle

### OTHER
- **SEATPOST**: Steel
- **SADDLE**: Trek Freestyle
- **BRAKES**: Alloy direct pull
- **PEDALS**: Alloy platform

### ADDITIONALs

### COLORS
- Bright Silver • Blue/black decals • Blue fork
- Matte Pea Green • Blue/Black decals • Gloss Black fork

### GEARING
- **44**
- **16 55**

### FIT
<table>
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<th>Frame</th>
<th>All-around</th>
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<tr>
<td>Steerer Length, mm</td>
<td>174</td>
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</table>

2002 Trek Technical Manual
Vert 2

**FRAMESET**

MAIN TUBES .......... Cro-Moly steel top and down tube
STAYS ............... Hi Tensile steel
FORK ............... Cro-Moly 1 3/8" tapered
HEADSET .......... Steel

<table>
<thead>
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<tr>
<td>25.4/34.0/30.0</td>
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**CONTROLS**

HANDLEBAR .......... Trek Freestyle
STEM ............... Trek Jaws BMX, direct connect
BRAKE LEVERS ...... Alloy, direct pull
GRIPS ............. Bontrager dual density

**DRIVETRAIN**

CRANKSET .......... Trek 3-pc. steel
BB ................. One-piece type
CHAIN ............. KMC 410
CASSETTE .......... ACS Claw, 16T

**WHEELSET**

FRONT WHEEL ...... Trek, alloy hub, 48°, 14mm axle, Al alloy rim
FRONT TIRE ...... Trek Freestyle
REAR WHEEL ...... Trek, alloy hub, 48°, 14mm axle, Al alloy rim
REAR TIRE ...... Trek Freestyle
SPOKES .......... 14G UCP
INNER TUBES ....... Schraeder valve

**OTHER**

SEATPOST .......... Steel
SADDLE .......... Trek Freestyle
BRAKES .......... Alloy direct pull
PEDALS .......... Alloy BMX
SEAT BINDER ...... Alloy w/integral bolt
ADDITIONALS ...... SST Oryg rotor, Trek pegs (2 pr.)

**COLORS**

Candy Blue • Blue/Black decals • Black for

**GEARING**

44
16 55

**FIT**

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>All-around</th>
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<tr>
<td>Steerer</td>
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TR30

**FRAMESET**

MAIN TUBES .......... Cro-Moly steel
STAYS ............... Cro-Moly steel
FORK ............... Trek Dirt Cro-Moly, 1 3/8" tapered
HEADSET .......... Tioga threadless

<table>
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<th>Size</th>
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</thead>
<tbody>
<tr>
<td>25.4/34.0/30.0</td>
<td>25.5</td>
</tr>
</tbody>
</table>

**CONTROLS**

HANDLEBAR .......... Trek Cro-Moly
STEM ............... Trek Jaws BMX, direct connect
BRAKE LEVERS ...... Alloy, direct pull
GRIPS ............. Bontrager BMX

**DRIVETRAIN**

CRANKSET .......... Trek 3-piece forged steel, 44T
BB ................. One-piece type
CHAIN ............. KMC 410
CASSETTE .......... ACS Claw, 16T

**WHEELSET**

FRONT WHEEL ...... Trek, alloy hub, 48°, 14mm axle, Al alloy rim
FRONT TIRE ...... Maxxis Holy Roller
REAR WHEEL ...... Trek, alloy hub, 48°, 14mm axle, Al alloy rim
REAR TIRE ...... Maxxis Holy Roller
SPOKES .......... 14G UCP
INNER TUBES ....... Schraeder valve

**OTHER**

SEATPOST .......... Steel
SADDLE .......... Trek Dirt Jumper
BRAKES .......... Alloy direct pull
PEDALS .......... Alloy BMX
SEAT BINDER ...... Alloy w/integral bolt
ADDITIONALS ...... Pegs (1 pr.), SST Oryg rotor

**COLORS**

Matte White • Green/Black decals • Gloss Black fork

**GEARING**

44
16 55

**FIT**

<table>
<thead>
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<th>Frame</th>
<th>Size</th>
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<tr>
<td>Steerer</td>
<td>Length, mm</td>
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</tbody>
</table>
## TR20

### FRAMESET

- **MAIN TUBES**: Hi Tensile steel w/CroMoly top and down tube
- **STAYS**: Hi Tensile steel
- **FORK**: Trek Dirt, 1 3/8" tapered Cro-Moly blades

### HEADSET

- **Tioga threadless**
  - Axd-crown length, mm: 322.0
  - Stack height, mm: 25.5

### CONTROLS

- **HANDLEBAR**: Trek
  - Clamp diameter, mm: 22.2
- **STEM**: Trek Jaws BMX, direct connect
  - Steerer clamp height, mm: 31.7
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Bontrager BMX

### DRIVETRAIN

- **CRANKSET**: Trek 3-piece forged steel, 44T
  - Bolt hole circle, mm: 1 piece
- **CHAIN**: One-piece type, KMC 410
  - Chain type: 1/8"
  - Chain length (links): 88
- **CASSETTE**: ACS Claw, 16T

### WHEELSET

- **FRONT WHEEL**: Trek, alloy hub, 48°, 1/2" axle, Al alloy rim
  - E.R.D., mm: 406
  - Rim strip: Rubber
- **FRONT TIRE**: Knobby, square style
  - Tire size: 20 x 2.1
- **REAR WHEEL**: Trek, alloy hub, 48°, 1/2" axle, Al alloy rim
  - E.R.D., mm: 406
  - Rim strip: Rubber
- **REAR TIRE**: Knobby, square style
  - Tire size: 20 x 2.1
- **SPOKES**: 14G UCP
  - Front, mm: 187, 3x
  - Rear, mm: 186/186, 3x

### OTHER

- **SEATPOST**: Steel
  - Outer diameter, mm: 25.4
- **SADDLE**: Bontrager FS10 BMX
- **BRAKES**: Alloy direct pull
- **PEDALS**: Platform
  - Axle diameter: 1/2"
- **SEAT BINDER**: Alloy w/integral bolt
  - Inner diameter, mm: 28.6
- **ADDITIONALS**: Pegs (1 pr.), SST Oryg rotor

### COLORS

- Matte Black • Blue/Black decals • Black fork

### GEARING

| 44 | 16 | 55 |

### FIT

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<th>Pro</th>
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<tr>
<td>Steerer</td>
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</table>

## TR10

### FRAMESET

- **MAIN TUBES**: High tensile steel
- **STAYS**: Hi Tensile steel
- **FORK**: Trek Dirt, 1 3/8" tapered Cro-Moly blades

### HEADSET

- **Tioga threadless**
  - Axd-crown length, mm: 322.0
  - Stack height, mm: 21.2/32.5/26.4

### CONTROLS

- **HANDLEBAR**: Trek
  - Clamp diameter, mm: 25.4
- **STEM**: Trek Jaws BMX, direct connect
  - Steerer clamp height, mm: 31.7
- **BRAKE LEVERS**: Alloy, direct pull
- **GRIPS**: Bontrager BMX

### DRIVETRAIN

- **CRANKSET**: Trek forged steel, 44T
  - Bolt hole circle, mm: 1 piece
- **CHAIN**: One-piece type, KMC 410
  - Chain type: 1/8"
  - Chain length (links): 88
- **CASSETTE**: ACS Claw, 16T

### WHEELSET

- **FRONT WHEEL**: Steel hub, 36°, 3/8" axle, Aluminum alloy rim
  - E.R.D., mm: 406
  - Rim strip: Rubber
- **FRONT TIRE**: Knobby, square style
  - Tire size: 20 x 1.95
- **REAR WHEEL**: Steel hub, 36°, 3/8" axle, Aluminum alloy rim
  - E.R.D., mm: 406
  - Rim strip: Rubber
- **REAR TIRE**: Knobby, square style
  - Tire size: 20 x 1.95
- **SPOKES**: 14G UCP
  - Front, mm: 188, 3x
  - Rear, mm: 186/186, 3x

### OTHER

- **SEATPOST**: Steel
  - Outer diameter, mm: 25.4
- **SADDLE**: Bontrager FS10 BMX
- **BRAKES**: Alloy direct pull
- **PEDALS**: Platform
  - Axle diameter: 1/2"
- **SEAT BINDER**: Alloy w/integral bolt
  - Inner diameter, mm: 28.6
- **ADDITIONALS**: Pegs (1 pr.), SST Oryg rotor

### COLORS

- Candy blue/Gloss Black • White/Red decals • Black fork

### GEARING

| 44 | 16 | 55 |

### FIT

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Pro</th>
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<td>Seatpost</td>
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<tr>
<td>Steerer</td>
<td>Length, mm</td>
<td>163</td>
</tr>
</tbody>
</table>
For 2002
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, Trek kids bikes are bikes 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 Trek 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 Trek kids' bikes; they use parts you'd expect on other Trek 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. We use 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 Trek bike.
### Mt. Lion 60

**FRAMESET**
- MAIN TUBES: Hi Tensile steel
- STAYS: Hi Tensile steel
- FORK: Hi Tensile steel

**HEADSET**
- Frame crown length, mm: 284
- Size: 25.4/34.0/30.0
- Stack height, mm: 34.5

**CONTROLS**
- HANDLEBAR: Steel
- STEM: Quick change, quill

**DRIVETRAIN**
- RR DERAILLEUR: Shimano Tourney TY22
- CRANKSET: One-piece type
- BB: One-piece type
- CHAIN: KMC Z-51

**WHEELSET**
- FRONT WHEEL: Alloy, nutted hub, 32°, Aluminum alloy rim
- FRONT TIRE: Innova MTB
- REAR WHEEL: Alloy, nutted hub, 32°, Aluminum alloy rim
- REAR TIRE: Innova MTB
- SPOKES: 14G UCP

**OTHER**
- SEATPOST: Alloy
- SADDLE: Trek padded
- BRAKES: Alloy direct pull
- PEDALS: Platform
- SEAT BINDER: Quick release, 47mm

**COLORS**
- Blue
- Purple/Blue

**GEARING**

<table>
<thead>
<tr>
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<th>Size</th>
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<th>Stem Length, mm</th>
<th>Crank Length, mm</th>
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**FIT**

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<th>Size</th>
<th>Handlebar Width, mm</th>
<th>Stem Length, mm</th>
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<td>40</td>
<td>140</td>
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</tbody>
</table>

### Mt. Lion 30

**FRAMESET**
- MAIN TUBES: Hi Tensile steel
- STAYS: Hi Tensile steel
- FORK: Hi Tensile steel

**HEADSET**
- Frame crown length, mm: 284
- Size: 22.2/30.0/27.0
- Stack height, mm: 35.0

**CONTROLS**
- HANDLEBAR: BMX
- STEM: 4 bolt BMX, alloy top
- BRAKE LEVERS: Alloy, direct pull, right only

**DRIVETRAIN**
- CRANKSET: One-piece type, 36T
- BB: One-piece type
- CHAIN: KMC 410

**WHEELSET**
- FRONT WHEEL: Steel hub, 36°, Aluminum alloy rim
- FRONT TIRE: Trek Paw
- REAR WHEEL: Coaster brake hub, 36°, Aluminum alloy rim
- REAR TIRE: Trek Paw
- SPOKES: 14G UCP

**OTHER**
- SEATPOST: Alloy
- SADDLE: Trek Paw design
- BRAKES: Coaster type
- PEDALS: Platform
- SEAT BINDER: Alloy w/integral bolt

**COLORS**
- Red/Silver
- Blue

**GEARING**

<table>
<thead>
<tr>
<th>Frame</th>
<th>Size</th>
<th>Handlebar Width, mm</th>
<th>Stem Length, mm</th>
<th>Crank Length, mm</th>
<th>Seatpost Length, mm</th>
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**FIT**

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<th>Steerer Length, mm</th>
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<td>550</td>
<td>50</td>
<td>140</td>
<td>140</td>
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</table>
## Mt. Cub 16

### FRAMESET
- **MAIN TUBES**: Hi Tensile steel
- **STAYS**: Hi Tensile steel
- **FORK**: Hi Tensile steel
  - Axle-crown length, mm: 234
- **HEADSET**: Steel
  - Size: 22.2/30.0/27.0
  - Stack height, mm: 35.0

### CONTROLS
- **HANDLEBAR**: Steel BMX, 130mm rise
  - Clamp diameter, mm: 22.2
- **STEM**: 4 bolt BMX, alloy top
  - Steerer clamp height, mm
- **GRIPS**: Trek Paw design

### DRIVETRAIN
- **CRANKSET**: One-piece type, 32T
  - Bolt hole circle, mm: 1 piece
- **BB**: One-piece type
  - Shell x axle, mm: 24 TPI
- **CHAIN**: KMC 410
  - Chain type: 1/8" 19
  - Chain length (links): 74

### WHEELSET
- **FRONT WHEEL**: Steel hub, 28°, Steel rim
  - E.R.D., mm: 321
  - Rim strip: PVC
- **FRONT TIRE**: Trek Paw
  - Tire size: 16 x 2.125
- **REAR WHEEL**: Coaster brake hub, 28°, Steel rim
  - E.R.D., mm: 321
  - Rim strip: PVC
- **REAR TIRE**: Trek Paw
  - 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**: Trek Paw design
- **BRAKES**: Coaster type
- **PEDALS**: Platform
  - Axle diameter: 1/2" 9B 9G
- **SEAT BINDER**: Bolt, M6 x 30
  - Inner diameter, mm
- **ADDITIONALS**: Training wheels, chainguard, and pads

### COLORS
- Blue/Black (boys)
- Red (boys)
- Purple/White (girls)
- Pink (girls)

### GEARING
- 32 19 26

### FIT
- **Frame**: Size 8 8G
- **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

## Mt. Cub 12

### FRAMESET
- **MAIN TUBES**: Hi Tensile steel
- **STAYS**: Hi Tensile steel
- **FORK**: Hi Tensile steel
  - Axle-crown length, mm: 185
- **HEADSET**: Steel
  - Size: 22.2/30.0/27.0
  - Stack height, mm: 35.0

### CONTROLS
- **HANDLEBAR**: BMX
  - Clamp diameter, mm: 22.2
- **STEM**: 4 bolt BMX
  - Steerer clamp height, mm
- **GRIPS**: Trek 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" 19
  - Chain length (links): 60

### WHEELSET
- **FRONT WHEEL**: Steel hub, 20°, Steel rim
  - E.R.D., mm: 220
  - Rim strip: PVC
- **FRONT TIRE**: Trek Paw
  - Tire size: 12 x 2.5
- **REAR WHEEL**: Coaster brake hub, 20°, Steel rim
  - E.R.D., mm: 220
  - Rim strip: PVC
- **REAR TIRE**: Trek Paw
  - Tire size: 12 x 2.5
- **SPOKES**: 14G UCP
  - Front, mm: 75, 3x
  - Rear, mm: 86, 3x
- **INNER TUBES**: Schraeder valve

### OTHER
- **SEATPOST**: Steel
  - Outer diameter, mm: 22.2
- **SADDLE**: Padded
- **BRAKES**: Coaster type
- **PEDALS**: Platform
  - Axle diameter: 1/2" 9B 9G
- **SEAT BINDER**: Bolt, M6 x 30
  - Inner diameter, mm
- **ADDITIONALS**: Training wheels, chainguard, fenders, and pads

### COLORS
- Blue (boys)
- Pink (girls)

### GEARING
- 28 19 17

### FIT
- **Frame**: Size 8 8G
- **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
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.
Torque Specs and Fastener Prep

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<th>Item</th>
<th>LB • IN</th>
<th>Nm</th>
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<tbody>
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<td>Handlebar clamp bolt, welded stem</td>
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<tr>
<td>Brake boss</td>
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</table>

**Loctite Applications**

We use Loctite, or similar product, in a variety of applications in fabrication and assembly of Fisher bikes, and components on those bikes. Here's a partial list, and the recommended Loctite product:

- Crown pinch bolts: 242 Blue
- Brake arch bolts: 242 Blue
- Cantilever studs: 242 Blue
- Pivot axle bolt, left: 290 Green
- Pivot axle bolt, right: 242 Blue
- Pivot bushings, frame/swingarm: 290 Green
- Shock mount bolts: 242 Blue
- Airhead bearings (OCLV Superlight): RC-680

Use Loctite carefully. Follow the instructions on the package, avoiding contact with your skin, or inhaling the vapors. As noted on the package, Loctite contains a known carcinogen.

For Loctite to work correctly, the parts must be clean and dry, with no grease, oil, or dirt. Loctitekleen 'N Prime is an excellent cleaner and will reduce fixture time.

With blue 242 Loctite, apply to the threads prior to assembly. It will set up in 20 minutes, with full cure taking 24 hours. With green 290 Loctite, application is recommended after assembly. However, this can be impractical with hidden threads, like on the rear suspension pivot bolts or rear suspension bushings. 290 is set in 3 minutes, and again requires 24 hours for a full cure. Please do not confuse Loctite 290 with Loctite 640, which is also green, as 640 can make disassembly much more difficult.

**Highly Recommended Grease Applications**

Most threaded fasteners will benefit from the application of a light grease-type lubricant. This prevents corrosion and galling, as well as allowing a tighter fit with a given torque. For this reason, it's a good idea to lubricate almost all threaded fasteners. But some fasteners and parts interfaces really need grease. Here are a few:

- **Seatpost/seat tube interface** - Grease the seatpost where it inserts into the frame on all aluminum and steel frames.
- **Bottom bracket threads** - We recommend applying grease to all bottom bracket/frame interfaces, as well as the bearing/cup interfaces. This prevents corrosion and will virtually eliminate creaks, a common complaint among riders with cartridge bottom brackets.
- **Stem/steerer interface** - Grease the quill of conventional stems where they insert into the fork. With Aheadset type stems, a light oil is recommended, as grease may make it difficult to properly secure this type of stem to the steerer.
- **Stem/handlebar/bar end pinch bolts** - Any and all of these fasteners are small, so corrosion or galling can really cause problems. Its also critically important to the riders safety that they be correctly tightened. Grease both the threads, as well as the bearing surface of the fasteners which rotate against the fixed part.

**Places to Avoid Grease**

- With OCLV bikes, DO NOT grease the seatpost. A fiberglass sleeve bonded into the seat tube prevents corrosion, and any grease may cause the seatpost to slip, even with correct seatpost binder torque.
- **Bottom bracket axle/chainring arm interface** - Avoid greasing the tapered spindle of a bottom bracket, as this may allow the crank arm to insert an incorrect distance onto the bottom bracket spindle. This can cause crank arm clearance problems with the frame, or incorrect chainline with the specified components. A light oil will adequately prevent any unwanted corrosion in most cases.
Fuel Pivot Service

Prepare the bike
1. Clamp the frame upright in a workstand by its seat-post with the head tube vertical.

Removing the rear swingarm
1. Remove the rear wheel and right crankarm. Disconnect the rear brake and rear derailleur cable.
2. If possible, open the front derailleur cage and remove the chain. Otherwise, remove the rear derailleur.
3. Identify the seat stay pivot bolt (Fig. 32). The bolt has a high polish, while the axle is anodized aluminum. While holding the axle with a 5mm allen wrench, use another 5mm allen wrench to loosen the bolt 4 to 5 turns. Tap the bolt head to partially drive the axle out of the assembly. Once loose, you can probably pull the axle (Fig. 33) out with your fingers. As you remove the axle, be careful not to let the swingarm swing down and hit the frame.
4. Remove the main pivot bolt and axle, using the same technique as with the seat stay pivot axle.
5. Ease the swingarm out of the rocker bushings and off the main pivot bushings. While pulling the swingarm rearward, it may help to wiggle the swingarm slightly from side to side.

Removing the shock
1. If the swingarm is attached, support the swingarm (especially if the rear wheel is in the frame) so that it doesn’t hit the frame while removing the shock.
2. Hold the upper shock bolt with a 5mm allen wrench while loosening the nut with a 10mm end wrench. Remove the nut, and slide the bolt out. If the bolt has been loose, it’s possible that it has cut threads in the aluminum swingarm shock mount. In this case, you may need to “unthread” the bolt from the frame.
3. Hold the lower shock bolt with a 5mm allen wrench while loosening the nut with a 10mm end wrench. Remove the nut, and slide the bolt out. Be careful not to drop the shock as you remove the bolt.

Removing the main pivot bushings
1. Remove the main pivot bushing from the frame. This part is held in place with Loks, so you will probably need to lightly tap it with a hammer to drive it out of the frame (Fig. 35). A socket on an extension makes a good drift punch. The socket should contact the metal portion of the bushing, barely fitting inside the swingarm and pivot lug.
2. Do not use heat to loosen the Loktite, as heat may damage the frame or paint.
3. Remove the main pivot bushing “top hats” (Fig. 36) from the swingarm. These are also installed with Loks, so again tap them out with hammer using a properly sized socket. Avoid damage to the swingarm by properly supporting it as you drive out the bushings.

Removing the rocker
1. Loosen the rocker pivot axle, but don’t remove it yet.
2. Loosen each of the six rocker bridge bolts holding together the side plates of the rocker (Fig. 37). To allow the rocker to freely pass around the seat tube, loosen each bolt 4 to 5 turns.
3. Remove the pivot axle, and careful slide the rocker off the frame.
4. Remove the rocker bridge bolts and bridges (Fig. 38).

Inspecting the parts
1. Inspect the pivot bushings in the upper end of the swingarm as well as the rocker pivot lug (Fig. 39). If they are in good shape, they will be a light color (Fig. 40) with no deformation, cracks, or chips.

If the bushings are damaged or worn, remove them. These bushings are installed dry, so you should be able to simply push them out. Do not use a screwdriver or other sharp tool, instead try something blunt like an allen wrench. If you use a sharp tool, you may cut or gouge the bearing surface, and this damage would require replacement of the bushing.
Inspect the parts

1. With a clean rag, wipe off all the surfaces. If any part is worn, it should be replaced. Signs of wear on the pivot and link axles are discoloration or a high degree of polish.

Some dark deposits may be left as the bushings and axle 'seat in' to each other. When this happens, some of the bearing material is sort of plated onto the axle. Its normal, and actually makes the pivot run smoother.

The bushings are harder to inspect; some discoloration is normal as the bushings and axle seat in to each other. If wear looks uneven or non-concentric, it's best to replace them.

Note: When in doubt, throw out old parts. It's relatively cheap to replace the parts, and time consuming to perform a rebuild. You do the customer a favor by only tearing their bike apart once.

Prepare the parts for reassembly

1. Clean the bonding surfaces of the main pivot bushings and frame. These surfaces include the outside of the tubular main pivot bushing, the seating surfaces of the main pivot 'top hat' bushings that go into the swingarm, and the parts of the frame and swingarm that the bushings contact. These surfaces should be cleaned with LocTite Kleen 'n Prime.

   Be careful not to get Kleen n Prime on the paint or bushing material. It will remove paint, and also remove the lubrication in the bushings.

2. To clean the rocker pivot bushings and upper swingarm pivot bushings, simply wipe clean of dust or other debris.

3. Do not lubricate any bushings.

4. Clean the pivot axle bolts, shock mount bolts, and rocker bridge bolts with Kleen n Prime.

Install the main pivot bushings

1. Check the fit of the bushings in the frame and swingarm by dry-assembling them (practice installation, but without LocTite). Normally the bushings are a light press fit, meaning they are snug but easily go into place with hand pressure. If the parts fit correctly, go to Step 2. If they seem very loose, go to Step 3.

2. If the parts fit correctly, apply LocTite 290 to all contact surfaces between the bushings and the frame or swingarm, and install the bushings.

3. If the parts seem very loose, LocTite RC680 is required. 290 is a thread locker, and it works best where parts are in tight contact. RC 680 is a filler, so it has the ability to fill larger gaps and securely bond parts that do not fit tightly together.

4. After installing the bushings, wipe off any excess LocTite, particularly removing any LocTite that contacts the bearing surface.

Install the main pivot axle.

1. Carefully align the swingarm with the main pivot of the frame. The fit is tight. Avoid contact between the bushings and any residual LocTite. Avoid scarring of the pivot surfaces as you slide the parts together.

2. Align the swingarm and install the main pivot axle (the long one) from the right side of the bike. Slide it all the way through the frame and swingarm eyes.

3. Apply LocTite 290 to the threads of the pivot bolt, and install the bolt from the left side of the bike. Tighten to 61-75 lb•in (6.9-8.5Nm).

Install the rocker bushings

1. The bushings in the rocker pivot lug and the upper swingarm are all installed dry. Simply press them into place, being careful to keep them aligned during insertion.

Install the rocker and pivot axle.

1. Apply LocTite 290 to the threads of the rocker bridge bolts.

2. Loosely assemble the back of the rocker, but do not attach the small cylindrical spacer yet. Leave the bolts 4-5 turns unthreaded.

3. Slide the rocker around the seat tube. Install the cylindrical spacer and remaining rocker bridge bolts.

4. Insert the rocker axle from the right side of the bike.

5. Apply LocTite 290 to the threads of the rocker pivot bolt, and install the bolt from the left side of the bike. Tighten to 50-75 lb•in (5.7-8.5 Nm).

6. Tighten the rocker bridge bolts to 50-85 lb•in (5.7-9.6 Nm).

Install the rocker and pivot axle.

1. This axle goes through the swingarm, and rocker. Apply LocTite 290 to the threads of the pivot bolt, and install the axle from the right side of the bike. Tighten the axle bolt to 50-85 lb•in (5.7-9.6 Nm).

Install the shock mount bolt.

1. Make sure the shock orientation is how you would like it. Insert the upper shock mount bolt from the right side of the bike.

2. Insert the lower shock mount bolt from the right side of the bike.

2. Apply LocTite 290 to the threads of the bolts. Install the nuts and tighten to 133-164 lb•in (15-18.5 Nm).

Allow to Dry

LocTite normally requires 24 hours to completely set. During this time, the bike should not be ridden. Do not compress the suspension or in other ways disturb the LocTite until it is has fully set.
Tubeless Compatible technology allows the owner to choose between a conventional tire and inner tube, or a tubeless tire, including all current tubeless-type tires.

Complete bicycles sold with Tubeless Compatible wheels normally have inner tubes installed in the tubeless tires. Tubeless tires ‘bleed’ air faster than an inner tube, which over time may allow air loss. To keep the tires inflated longer, these bikes are equipped with tubes to protect their rims in shipping, and allow easy display. To convert these wheels to tubeless, see item #3.

The key to the Tubeless Compatible system is a special rim and its mated rim strip. This rim strip is made of a thermoplastic rubber material, so its impervious to air. Installed correctly in the special mated rim, it seals tightly to prevent air escaping through the spoke holes.

There are additional surfaces which must seal tightly for the tubeless system to hold air. 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.

A properly mounted tubeless tire will ‘bleed’ air, up to 4 PSI (0.25 ATM) per day. If a tubeless tire loses air faster than 4 PSI (0.25 ATM) make sure the valve nut is tight, check for punctures, and make sure all sealing surfaces are clean. The sealing surfaces include the tire to rim contact, the tire to rim strip contact, and the rim strip to rim contact. Dirt, sand or other grime on any of these surfaces may allow extra air to escape.

To inflate a newly installed tubeless tire, the tire must make full contact with the rim at the bottom of the rim well. To achieve this contact a tubeless tire has to fit on the rim more tightly than a similarly sized conventional tire.

With a snug fitting tubeless tire, barehanded installation may be difficult. If you use tire levers for installation or removal, do not damage the rim or abrade the tire beads. If either surface is damaged, the roughened surface may allow a greater rate of air to bleed from the mounted tire.

With the tire beads contacting the bottom of the rim well, air pressure is used to push the beads into their seated, sealed position against the rim hooks. A compressor is not required to seat the tire beads. A good floor pump or an air cartridge work, and a hand pump may work if nothing else is available.

In the case of a punctured tubeless tire, you can patch a small (less than 3mm) hole from the inside of the tire. A sticky glueless patch is recommended. If the puncture is greater than 3mm, or the tire casing is damaged instead of merely punctured, with any broken threads, replace the tire. If the air leaks rapidly and the source is not immediately obvious, it may be difficult to inflate the tire enough to locate the puncture. However, its easy to convert from tubeless to the use of a standard inner tube.

1. INSTALLING AND INFLATING A TUBELESS TIRE

Install the valve stem.
1. Center the special rim strip in the rim. Make sure it fully covers all spoke holes.
2. Align the base of the special tubeless valve with the rim (Fig. 41). Press the valve stem through the rim strip and rim until its seated firmly against the bottom of the rim well.
3. Install the tubeless valve nut (Fig. 41) onto the valve, and tighten firmly. There should be no gap between the valve and the rim strip.
4. Inspect the rim strip. Make sure the rim strip lies centered in the rim well, with no wrinkles or unevenness.

WARNING
Make sure the rim strip covers all of the spoke holes or spoke heads. If they are exposed they may allow air loss, or puncture the inner tube, and may cause loss of control resulting in personal injury.

Install the tubeless tire.
5. Lay one tire bead into the center of the rim well. Start opposite the valve to give the tire beads the maximum slack. If you start at the valve, the bead will lie on top of the valve. With the bead on top of the valve, some slack will be taken up which is needed to lift the tire bead over the rim shoulder (Fig. 42). Before proceeding to #6, move this first bead out of the rim well to make room for the second bead.

WARNING
Do not attempt to use a standard tire without an inner tube. Such use may cause a rapid deflation of the tire resulting in loss of control resulting in personal injury. If you are unsure if a tire is a compatible tubeless design, consult your dealer.

Again start opposite the valve and install the second tire bead. Move all the way around the rim until the second bead is completely in the rim well.

Note: If you choose to use tools to mount the tire, be careful not to mar the rim or abrade the tire as this could reduce the required ability of the rim to seal to the special beads of a tubeless tire.
Inflate the tubeless tire

1. Begin to inflate the tire. The tubeless valve stem works just like a standard presta valve. Unlock the presta nut (Fig. 41), and use a pump with a presta fitting. Initially, its best to inflate the tubeless tire as rapidly as possible. This forces the beads out to the rim hook where they will seal (Fig. 43).

2. With the tire beads sealed to the rim hook, inflate the tire to about 60PSI (4 ATM) until the tire beads lock into the rim well (Fig. 43).

3. Visually check that the beads are seated correctly in their locked position (Fig. 43). Most tires have lines or marks running around the casing, just above the bead. When correctly installed, these lines are at an even distance from the rim. When the beads are correctly seated all around the rim, inflate (or deflate) to the desired pressure.

2. ADDING AN INNER TUBE

Remove the tubeless tire

1. Let all the air out of the tire (Fig. 44).

2. To remove the tire with bare hands, one bead must be fully at the bottom of the rim well. On tubeless compatible rims, the well is too narrow for both beads to rest fully against the bottom of the well at the same time, so the tire must be placed to get one bead down. With the wheel facing you (Fig. 45), roll the tire up and away from the rim with your thumbs while you use your fingers to tuck the opposite bead into the rim well (Fig. 46).

At the valve, pull the lower, slacker bead of the tire up, out, and away from the rim (Fig. 47).

3. Pull the loosened bead up and out of the rim, rolling and pushing the tire toward the hub (Fig. 48) until the first bead is completely off the rim. Repeat to remove the other bead.

Note: If you choose to use tools to remove the tire, be careful not to mar the rim as this could reduce its ability to seal to the special beads of a tubeless tire.

Remove the valve stem

4. Remove the tubeless valve nut. Thread the presta nut into the valve stem, and push the stem out of the rim.

Install the tire and tube

5. Make sure the rim strip is centered in the rim well and fully covers all spoke holes. Install the tire and tube in the normal manner. With an inner tube, either a conventional or tubeless tire can be used.

3. CHANGING TO A TUBELESS TIRE

Remove the tire and inner tube.

1. Remove the tire by following item #2 Adding an Inner Tube, except start removing the tire opposite the valve.

2. Refer to item #1, Installing and Inflating a Tubeless Tire.

4. REMOVAL AND INSTALLATION OF A RIM STRIP

Remove the rim strip

1. After removing the tire (and tube, or tubeless valve stem) insert a round-bladed screwdriver (or similar tool) through the valve hole, and between the rim and rim strip (Fig. 49). If the rim strip is to be used again, be careful not to tear or stretch the hole.

3. Lift the rim strip and place a tire lever underneath. Use the tire lever to lift and then roll the rim strip over the opposite rim hook (Fig. 50). Be careful not to mar or damage the rim, or rim strip, with the tire lever.

4. Continue to roll the rim strip up and out of the rim as you work your way fully around the rim.

Install the rim strip

1. Make sure the rim strip is in good condition, with no tears, holes, or deformed areas near the valve hole or along its edges.

2. Align the rim valve hole and rim strip valve hole. Place the special tubeless valve (or a similar item) through the rim strip valve hole, and then the rim. The ‘U’ shape of the rim strip should face the same direction as the ‘U’ shape of the rim well (Fig. 51).

3. Work the rim strip into the rim, moving away from the valve stem in both directions. With six to ten inches (15 to 25 cm) rim strip remaining outside the rim, manually lift and slightly stretch the rim strip so that it can be laid flat in the rim well.

4. Follow the appropriate installation procedures to install a tire.

WARNING

Failure to maintain a minimum tire inflation of 30PSI (2ATM) may result in rapid deflation causing a loss of control resulting in personal injury.

Fig. 44

Fig. 45

Fig. 49

Fig. 50

Fig. 51
IMPORTANT NOTE BEFORE YOU BEGIN:

There are two separate head tube inserts in an OCLV 110 frame (Fig. 23), the upper bonded insert and the lower bonded bearing cup. These two inserts act together like a conventional, cylindrical head tube, but at a reduced weight.

The two inserts are not joined by a tube. When using a headset removal tool to remove an Aheadset cup from the upper insert, make sure the tool is inside the insert, pressing directly on the cup. It is possible to place the tool outside the insert in the space between the insert and the head lug (Fig. 24), where it will instead be pressing on the carbon fiber of the head lug. Applying force to the head lug in this way will damage the frame, and is not covered by warranty.

The upper cup insert, which holds a standard 1 1/8" Aheadset cup, and the lower bearing cup, which holds the Airhead bearing (Fig. 25), are part of the frame. Do not attempt to remove the inserts, or you may damage the frame. Such damage is not covered by warranty.

INTRODUCTION

For the 2001 model year we have introduced a new OCLV road frameset, the OCLV 110 Superlight. For the 2001 model year, Trek 5900s and 5700s use this new frame. The OCLV 110 frame, fork, and lower headset bearing use a proprietary system. At this time, only the supplied parts are compatible with this system. No other frame, fork, or lower headset system can be substituted for parts in this system as supplied. The upper bearing uses a standard 1 1/8" Aheadset system, from which many substitutions are available as aftermarket parts.

TOOLS AND EQUIPMENT REQUIRED

- Headset cup removal tool
- Headset press
- 5900 Headset tool kit (or Klein AirHeadset™ tool kit)
- Star-fangled nut tool
- Metal-faced hammer
- Loktite RC680
- Loktite Kleen ‘n Prime

FORK REMOVAL INSTRUCTIONS

Removing the fork from the frame

1. Place bike upright in a workstand, clamped by the seatpost.
2. Remove the Aheadset top cap.
3. Remove stem and spacers from the steerer tube.
4. Remove compression washer, cone, and bearings from upper Aheadset leaving only the upper bearing cup in the upper head tube.
5. Thread the star-fangled nut insertion tool into the star-fangled nut already installed in the fork steerer tube (Fig. 26).
6. We recommend this step be done by two people. The first person should support the fork, so that it does not fall. The other person should firmly support the frame near the head tube with one hand, while hammering straight down on the star-fangled nut insertion tool. The fork is bonded in with Loktite, so it may take repeated blows to break loose the fork and bearing.
7. After the fork loosens, remove the star-fangled nut insertion tool, and slide the fork from the frame.

Removing the fork bearing

1. Clamp the steel channel in a vise allowing enough room for the fork to be inserted from either direction.
2. Thread the star-fangled nut insertion tool into the star-fangled nut already in the fork.
3. Carefully position the steerer in the steel channel so that the steerer rests on the channel with the bearing on the side nearest the star-fangled tool (Fig. 27). Hold the fork so it cannot fall.
4. Strike the star-fangled nut insertion tool with a hammer until the bottom bearing slides off the steerer.
5. Remove the fork from the steel channel.

Removing upper headset cup

1. With the fork removed from the head tube, the top Aheadset cup should be the only thing left in the head tube (besides the permanent bonded inserts, which are part of the frame).
2. Use a headset cup removal tool to tap the top Aheadset cup out of the upper bonded insert. Make sure the tool is engaging the Aheadset cup inside the bonded insert. If the tool is outside the bonded insert, frame damage will result.
3. Do not attempt to remove the lower bearing cup which holds the lower bearing. It is permanently bonded to the frame and cannot be removed.
FORK INSTALLATION INSTRUCTIONS

Top Aheadset cup installation
1. Using a standard headset press install the top bearing into the frame. Make sure the press engages the lower bonded insert such that no damage or deformation occurs to the bonded insert.

Fork bearing installation- Cleaning the parts
1. To properly install the bottom bearing on the steerer and into the frame, all surfaces must be clean of dirt, oil, grease, or other residue. The best cleaning agent is Loktite Kleen ‘n Prime, which not only cleans the surfaces but will speed the curing of the bonding agent. As an alternative you can also use acetone, trichlorethylene, or similar compounds. Do not use paint thinner, gasoline, or similar compounds which will leave an oily film and prevent bonding of the Loktite.
2. Clean the contact bearing areas of the steerer, the lower bearing cup, and both the inside and outside surfaces of the lower bearing. Once the surfaces are clean, avoid any contact with your hands, since they have oil on them.

IMPORTANT: be very careful to avoid any contact of the cleaning agent with the painted finish of the frame. These cleaning agents remove paint. Also avoid getting cleaning agents on the bearing seals, which may destroy the bearing grease.

Fork bearing installation
1. Place the steel channel in a vise. Place the Fork dropout rod in the fork dropouts (Fig. 28) and snug up the attachment bolts.
2. Slide the bearing on the steerer.
3. Slide the bearing and steerer, with bearing above the channel, into the slot of the steel channel which best fits the steerer.
4. Place the fork dropout rod in the fork dropouts and secure it by tightening down the hex head bolts and washers located on both ends of the rod.
5. With the hammer, tap the fork dropout rod until the bottom bearing is pressed into place, flush against the shoulder of the steerer.

Fork (with bearing) installation into frame
1. If needed, install the upper Aheadset cup as in “Top Aheadset Cup Installation” (see above).
2. With the frame upside down (the bottom bracket upward), secure the frame in a workstand by the seatpost.
3. Place the fork dropout rod into the fork dropouts and snug up the attachment bolts.
4. Apply a thin layer of Loktite RC680 to the inside of the lower bearing cup and outside of the headset bearing.
5. Slide the fork into the head tube.
6. We recommend this step be done with two people. One person supports the frame near the head tube. The other person, while centering the steerer in the upper Aheadset cup, lightly taps the fork dropout rod with a hammer to drive the bearing into the lower cup. While keeping the fork centered and aligned in the frame, carefully drive the bearing fully into the bearing cup in head tube.
7. Install the upper Aheadset parts; bearings, cone and compression wedge, spacers, stem, and top cap.
8. The frame may be moved, but should not be ridden yet. Allow 24 hours for the Loktite to fully cure before riding.