RETAIL TECHNICAL MANUAL

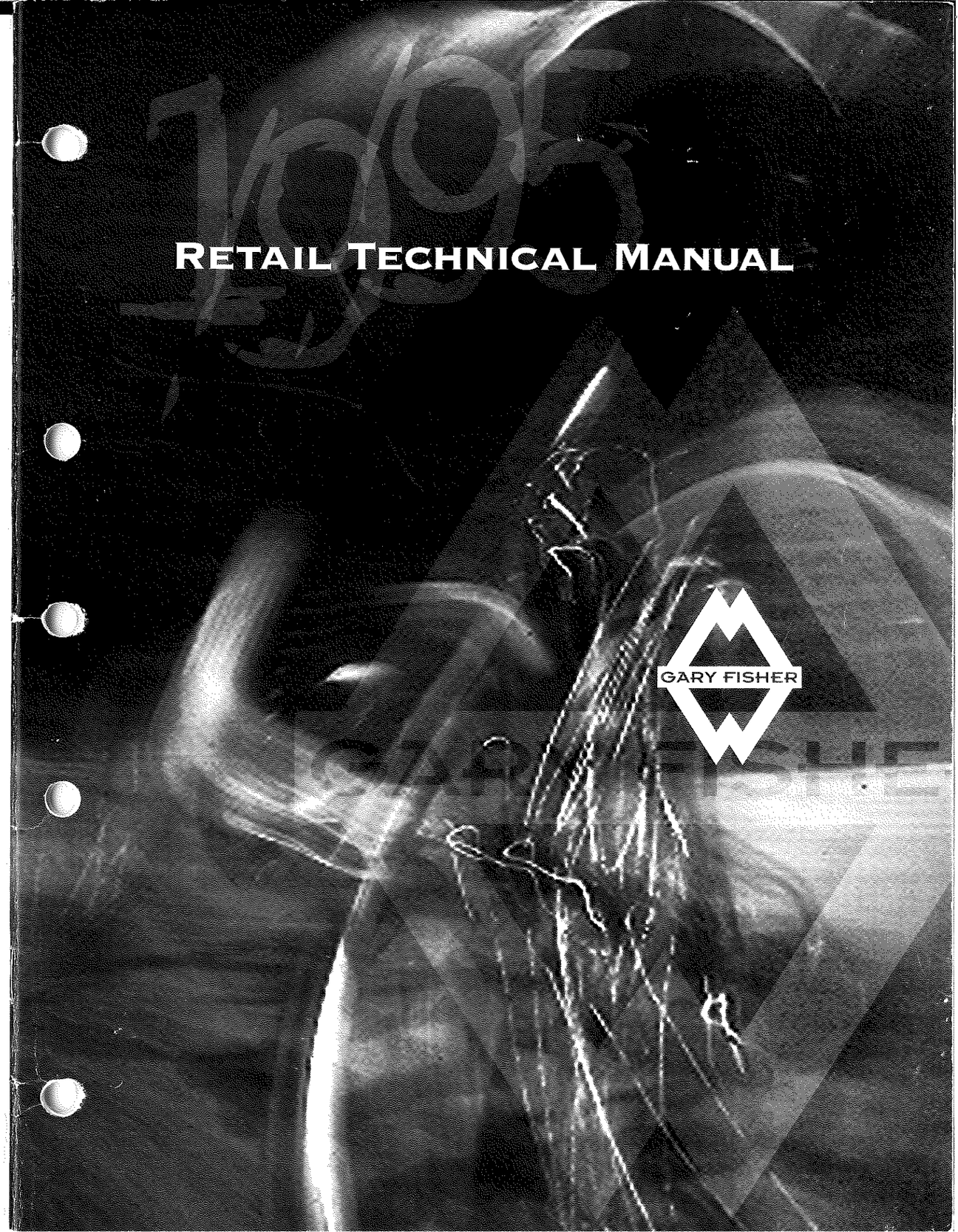


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Gary Fisher - The 'Dad' of Dirt.

Marin County California, 1974. Bell bottom jeans, no helmets, no gears, steep mountain descents. Gary Fisher and his roommate Charlie Kelly are the trendsetters in the 'clunker craze;' bombing down the dirt jeep trails of Mount Tamalpais on pre-war balloon tire cruisers, dropping thousands of vertical feet in a matter of a few short miles. The usual run of the mountain started with a pickup truck ride or a long walk pushing your 40 pound bike up the mountain and then screaming back down in a matter of minutes.

But Gary thought there had to be a better way. Given his job wrenching in a small San Rafael bike shop and his love to tinker, Gary started to evolve that downhill machine into something that could go uphill as well. Gary added touring gears and thumb shifters in addition to motorcycle brake levers and tandem drum brakes to his previous single speed downhill machine and voila!, the birth of the Mountain Bike.

The sceptics, including his roommate and riding partners said, "you can't do that, its gonna break," but time proved them wrong and pretty soon they were doing it too.

From there, Gary Fisher Bicycles has led the way to define and set the standards of the Mountain Bike industry. From the invention of the oversized headset to the development of the standard offset on a Rock Shox suspension fork, Gary Fisher has been there, every mudcaked mile of the way.

The 'New' Gary Fisher Bicycles

In 1993, Gary Fisher Bicycles was purchased by Trek, moving most Fisher production to Trek's Wisconsin manufacturing facility. With Fisher owned by one of the larger names in the business, naturally Gary's role in this new business venture was a point of curiosity. The most asked questions of Gary include:

How do you feel about Trek buying your bicycle company?

"Its a marriage of the best kind. I've worked with dozens of manufacturers to build my bikes through the years and now I can honestly say that I've found the best bike producer in the world. Now I'm working with true professionals, I couldn't be happier."

Yeah, but do you still design the bikes?

"Actually now that I'm working with the best factory and engineers in the business, I have more time to design and test my complete line instead of worrying about production. Now my complete focus is on design, development and testing- making Fishers even better mountain bikes. It literally is a dream come true."

So your bikes are not just Treks with a Fisher decal?

"Not at all. True, I've used Trek's OCLV technology in my line strictly because I believe in it, but beyond that, you'll find different geometries, different tubing, different tubing diameters, different tubing bends, different materials, different part specs- a completely different bike line. A line that is completely and definately Fisher."

New for 1995

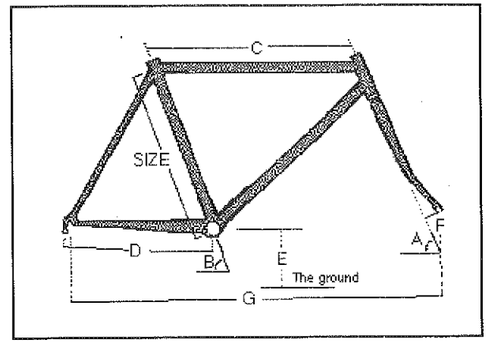
With a reorganized company and a clear vision of the future, Gary's innovation and creativity show though in his 1995 line. Some of the highlights include:

- The Tyro at a new price point
- A suspended, upscale version of the Tyro called the Maniac
- New small frame sizes
- Refined frame fit details
- The entire line is spec'd with GripShift
- Lower gears on the popular price point bikes
- A new high-end steel bike called the Cronus
- A new, lower priced OCLV carbon model called the Supercaliber
- New Rock Shox suspension forks
- System Components - American engineered parts which pare weight and enhance function
- And of course, more weight saving ideas across the line

We hope you will take the time to read through the information presented in this manual, and that the specifications and other resource materials will be of help to you when selling Gary Fisher bikes in the upcoming year. If you have any suggestions regarding this manual, or any other ways we can be of service, please write to:

Gary Fisher Customer Service
P.O. Box 183
Waterloo, WI 53594

Geometry Terminology



Head Angle (A) - The angle formed by the intersection of the centerline of the head tube and a horizontal plane. This angle effects steering quickness, and the steeper the head angle, usually the quicker the steering.

Seat Angle (B) - The angle formed by the intersection of the centerline of the seat tube and a horizontal plane. This angle effects the fit of the bike, particularly addressing the length of the femur (upper leg bone) by changing the rider's position over the crankset. Usually, smaller bikes will have steeper seat tubes, while larger bikes will have more relaxed seat angles.

Seat Tube Length (Size)- The distance from the center of the bottom bracket to the center of the top tube tube measured along the seat tube. We measure this way because that's how its shown on the engineering drawings, and because it more accurately tells the size of the frame. By using the center to center method, standover height may change with tube diameter, but the acutal fit is acucrately described. Alternate methods may measure to the top of the seat tube or top of the top tube, including the variable of tube diameter or extended seat tubes. Seat tube length relates to overall leg length, but with the advent of super-long seatposts and new frame designs, seat tube size is less meaningful than it once was.

Top Tube Length (C)- The distance from the junction of the centerlines of the head tube and top tube to the junction of the centerlines of the seat tube and the top tube. This measurement relates to torso length and positioning on the bike.

Effective Top Tube Length- The length of a horizontal line from the junction of the centerlines of the head tube and top tube to the imaginary centerline of the seat tube. This measurement is important due to the sloping top tube (with extra long seat post extension) currently favored by mountain bikers. A more accurate version of the top tube measurement, this relates to torso length and positioning.

Chainstay Length (D)- The distance from the center of the bottom bracket to the center of the rear axle. This dimension effects weight distribution over the rear wheel.

Bottom Bracket Height (E)- The distance from the center of the bottom bracket to the ground. This measurement effects ground to pedal clearance, as well as stability of the bike by dictating the height of the rider's center of gravity.

Offset (Rake) (F)- The perpendicular distance from the centerline of the head tube to the center of the front hub. Rake combined with the head tube angle yields another steering term, trail.

Wheelbase (G)- The distance from the center of the rear hub to the center of the front hub. This determines handling characteristics like turning radius, tracking stability, and shock absorption.

Trail- The distance between where the head tube centerline intersects the ground and a vertical line dropped from the center of the front hub. This measurement effects the stability of the steering system and the feel of the steering. Longer trail usually means a "heavier" or more stable feel, while less trail usually feels "quicker" or "lighter".

Front Center- The distance from the center of the bottom bracket to the center of the front hub. This distance effects both weight distribution and toe clip / front wheel overlap. Given that most mountain bikes use only a narrow range of steering angles and offsets, front center also refers to the amount of "cockpit room" the rider will have.

Stem- This should be considered part of the bike's geometry because it effects weight distribution and steering feel. Along with handlebar width, it also relates to arm and torso length.

It All Works Together- Every facet of bike design will effect another, so we can only talk in generalities about what any one dimension does to the bike. Its obviously true that each part of the bike is connected to another part of the bike. However, it isn't always apparent how changing one dimension on a bike will effect the others.

What's the Best Material for Bicycle Frames?

What Gary Says: A bicycle must be strong and it must be stiff. It should ride great, and it should be as light as possible to avoid wasting the rider's energy. And let's not forget that it should be affordable.

Its easy to see that strength is required. And low weight. Correct stiffness means that pedaling energy is transmitted to the rear wheel better. It also means that the wheels stay in plane when side-hilling, making the bike easier to control in technical terrain. Stiffness also prevents the frame from twisting in hard corners or rough terrain, which would allow the bike to change lines unexpectedly.

But like anything else, you can overdo a good thing. If a bike is too stiff, it will be harsh and the wheels won't follow the terrain like they should. If its not stiff enough, it won't ride right either.

The right material in the right dimensions adds to the feel of the ride. By experimenting, we've achieved that feel while maintaining a light, efficient, durable, and affordable line-up for any serious off-road rider.

What the Engineers Say: The two most important considerations when selecting a material for bicycle construction are Specific Ultimate Strength and Specific Modulus. In layman's terms, Specific Ultimate Strength is the breaking strength of a material divided by its weight. Specific Modulus can be translated to mean the stiffness per weight.

The reasons for the importance of these factors are simple. If a material does not have a blend of stiffness and strength, it will either be heavy or be lacking in either strength or performance. Let's look at an example: Cro-Moly steel has a high specific modulus, but a fairly low specific ultimate strength (see chart). This means that a fairly high amount of material (by weight) will have to be used to make a Cro-Moly bike of good strength. However, Cro-Moly steel is usually relatively inexpensive and so can offer a good value, even if a Cro-Moly bike will be a little heavier than one of our aluminum or carbon fiber models.

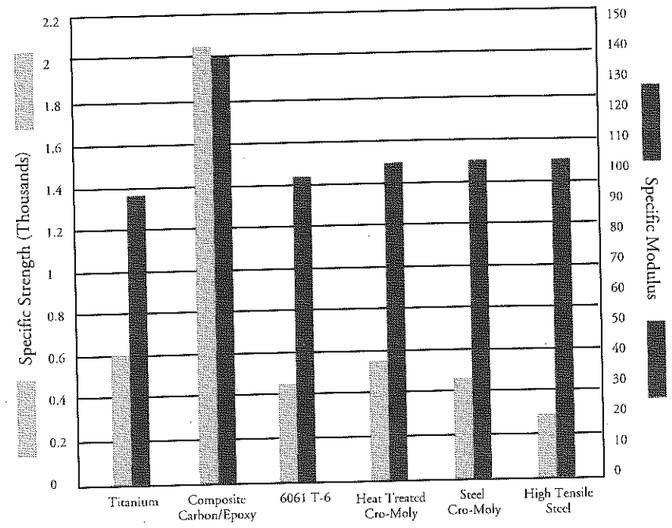
As another example, carbon fiber composite is quite a bit more expensive than Cro-Moly steel. However, because it has very high specific ultimate strength, a very light bike can be built that is very strong. In addition, carbon composite's high specific modulus means that even a very light carbon bike can still have the right stiffness for control and efficiency.

Another high tech material for bicycles is titanium. Although different alloys vary somewhat in their characteristics, generally titanium has a lower specific modulus than carbon fiber composite, Cro-Moly steel, and even some aluminum alloys. Titanium has a higher specific ultimate strength than Cro-Moly steel, but is lower in strength than carbon composite. This means that a titanium bike of good strength and stiffness will be heavier than a carbon fiber composite bike of like performance, even though considerably more expensive.

As you look at the chart comparing characteristics of the various materials, remember that many factors will effect the end product. For example, increasing the diameter of a tube will increase its stiffness, but reduce its resistance to dents, even with the same wall thickness. Manufacturing techniques will effect the price of a completed bicycle, where efficiency and accuracy can eliminate wasted time. Volume of manufacturing can bring prices down, an important fact that allows Gary Fisher bicycles to provide expensive OCLV carbon bikes at competitive prices.

Another important point is that there is more to a bicycle than the tubeset. Tubing which is no longer straight, or bikes that don't track straight due to poor alignment, are poor values. Gary Fisher bicycles are built with high tech processes to ensure that the properties of the tubing remain after construction. Combined with Gary's designs, this means that your customer will get the most performance possible at every price point in the Fisher line.

Specific Ultimate Strength & Specific Modulus



Bike Specifications: A Guide

This section is designed to help the mechanic in the shop as well as the sales person on the floor. We've put just about everything there is to know about each model on a page. You'll also find info to help you size a bike, or better fit a customer by switching to a different model.

Special Notes:

Headset size- indicates the Outer diameter/ Inner head tube diameter/ Fork crown race seat diameter of the stem in millimeters and also the stack height. This is the height of a headset when installed in the frame. This dimension is added to head tube length (also steerer clamp height and spacers for Direct Connect or AheadSet systems) to calculate steerer length.

Handlebars- Includes width and stem clamp diameter.

Stem and Stem extension- the length of the stem measured from the center of the handlebars to the centerline of the steerer and stem quill, along the centerline of the stem. Because some stems are horizontal and some stems angled, there are two other stem dimensions to be aware of: reach (the horizontal component of the stem) and rise (the vertical component of the stem). Example: A 100 mm stem with a 25° rise in a bike with a 71° head tube will have a 44° rise when measured from the ground. In the bike this 100 mm stem has a reach of 71 mm and a rise of 71 mm. Also listed is the steerer clamp height of Direct Connect stems, because this effects steerer length. The degrees of rise on each stem size specified.

Seatpost length- In some cases, long posts will not allow the seatpost to slide entirely down into the frame. If substituting seatposts, please ensure that the new seatpost is measured accurately for diameter.

Crankset- Lists chainring teeth and material (A for Aluminum, S for Steel), as well as the chainring bolt hole circle, a dimension which must be matched when replacing chainrings.

Bottom Bracket- indicates model, width, and axle length of the bottom bracket.

Front derailleur- indicates the seat tube diameter, or "braze-on type" if the derailleur doesn't use a band or clamp attachment.

Hubset type- describes the hub configuration for freewheels, number of gears, and the number of spokes and gauge required. Also listed is the O.L.D. (Outer Locknut Dimension) which indicates the width of the hub's axle between the inside dropout faces.

Tire size- Indicates the specified tire's listed size. In most cases, other tire sizes will also fit.

Angles and such-They're all listed, size by size. For explanations of the terms, and what they mean to the rider, see page 3.

Stand over height- the distance from the ground to the top of the top tube, measured in the *middle* of the top tube.

Reach- the horizontal distance combining the reach of the stem with the effective top tube. This is a different way of measuring reach than we have used in the past, but a more accurate one.

Head tube length- original length of head tube. Use this to calculate the steerer length is you need it. Add stack height, head tube length, and stem requirements (different direct connect stems and spacers require different steerer lengths). This dimension can also be helpful in determining how high the handlebars might be on a given bike model and size.

Gary Fisher Small Bikes

For 1995, Gary Fisher's 26 inch-wheeled mountain bikes come in frame sizes as small as 11.5 inches. Still there are riders who need smaller bikes to get the kind of performance Gary intended mountain bikes to offer. Gary's 24 inch wheeled bikes, the Tyro and Maniac, are designed with these riders in mind.

The question is always asked: "Why can't you make my size of bike with 'big' size wheels?". The answer revolves around weight distribution, handling characteristics, and more. But the simplest way to explain the problem is good fit. If the rider needs a short seat tube, they probably also need a short top tube.

The easiest way to get a shorter top tube than what's offered on the 11.5 inch Aquila would be to move the front wheel back towards the bottom bracket (decrease the front-center). This would create a problem because the front wheel would then contact the toe clips or the rider's foot when turning.

To avoid toe-clip overlap, the alternative method for shortening the top tube would be to use a more laid-back head angle while maintaining the existing front-center. Such a design would have very poor steering characteristics, so is unacceptable. The real solution, then, is to use a smaller front wheel so that you can decrease the front center without having toe-clip overlap.

As long as you're going to use a smaller front wheel, you should also use that size in the rear so that the rider doesn't have to carry two sizes of tubes in their mechanic's bag. This also allows the whole bike to be re-designed to be fully proportionate for the smaller rider with shorter chainstays and wheelbase. By making this change, Gary's small bikes will have the same feel under a small rider that Gary's bigger bikes offer to the bigger rider. The gearing has even been modified to provide similar gear ratios to the fisher models using 26 inch wheels (see charts below).

Gary feels very strongly that every Gary Fisher bike should handle and ride the way Gary himself would want it. The beginning mountain biker should have the equipment with the same capabilities as the professional racer because it makes off-road riding easier for both of them. Granted, the Procaliber Ltd. is lighter, but the Tyro can be ridden in the same terrain.

So who will fit these smaller bikes? Since the standover of a Tyro is 25.5 inches, we'd expect that someone from the low-to-mid four foot range up to someone around 5 feet would best be served by a Tyro or Maniac. Since the wheelbase is about an inch shorter than Gary's 'big' bikes, the smaller rider will get a quicker handling bike more appropriate for their smaller size. With the shorter chainstays, they will have more weight over the rear wheel for improved traction in climbing and braking. And by being more 'on top' of the bike, they will be able to better handle the bike in technical terrain. With the right size bike, they can experience the same thrill as Gary does on his own Fisher.

Tyro Gearing

	28	38	48
14	--	65	83
16	42	57	72
18	37	51	64
21	32	44	55
24	28	38	48
28	24	33	--

Maniac Gearing

	28	38	48
11	--	83	105
13	52	70	89
15	45	61	77
18	37	51	64
21	32	44	55
24	28	38	48
28	24	33	--

Tyro

General Specs

Sizes			11.5
Frameset	Frame	Hi-Tensile steel	w/Cro-Moly seat tube, TIG welded
	Fork	Hi-Tensile steel	Threaded, w/ forged dropouts
	Headset	HP01H	22.2/30.0/27.0, 35.5 mm stack height
Controls	Handlebars	Steel	25.4 mm stem clamp dia.
		Width	540
	Stem	Steel	TIG welded
		Length	105
		Degrees rise	24
		Insertion	135
	Shifters	QuickShift 60	
	Brake levers	Chang Star	w/reach adjusters
	Grips	Fisher Hex	Kraton
Saddle		Fisher	"SuperSoft" foam
	Seatpost	Steel	26.6 mm diameter
		Length	300
	Seat binder		M6 x 23.5
Brakes		Shimano Altus C90	
Drivetrain	Crankset	SR 28/38/48 w/ riveted rings	
		Length	165
	BB	YST 651	73/D3N
	Pedals	Wellgo	Nylon ATB with Cro-Moly spindles
	F. derailleur	Shimano Tourney	Down pull, 28.6 mm / 1 1/8"
	R. derailleur	Shimano Tourney	
	Freewheel	Shimano HG20	14-28 6 speed
	Chain	KMC HP70	
Wheelset	Hubs	JoyTech	Nutted f & r, threaded, 135 mm O.L.D.
	Rims	Alloy	
	Tires	Blackwall	24 x 1.9
	Tubes	Schraeder valve	
	Spokes	Chrome plated	36 front and rear
		Front	240 15ga.
		Rear- D/ND	234/238 15ga.
Weight		27.5 lbs. (17.2 kg)	
Color		Purple	

Geometry and Fit

	11.5
A. Head angle	70.5
B. Seat angle	74.5
C. Effective top tube	525
D. Chainstay length	394
E. Bottom bracket ht.	277
F. Offset	38
G. Wheelbase	981
Trail	68
Standover height	640
Reach	601
Head tube length	85

Three Steps to Selling a Tyro

1) The Tyro has been built for small folks who want a real mountain bike, not just a cut-down big bike. Correct weight distribution over the wheels allows great handling and excellent traction. The Tyro has all the features found on Gary's famous big bikes, but in a small package.

2) The Tyro has special spec to make mountain bike riding easier and safer for young folks. Nutted hubs take the worry out of wheel attachment. Narrow bars, shorter cranks, and adjustable reach brake levers all add up to a better fitting mountain bike that will help small riders learn to love the dirt.
A special compact fork design allows a lower top tube, which means more standover height. The extra standover adds safety, and also means more 'growing room' so a bike will fit over a longer period of timeso the Tryo is a better investment for the parent.

3) The Tyro has special gearing designed for smaller riders on smaller wheels. It uses GripShift Quickshift 60 shifters, so shifting is easier for small hands.

Maniac

General Specs

Sizes			11.5
Frameset	Frame	Cro-Moly	main tubes, TIG welded
	Fork	SR DuoTrack 7005	elastomer/coil spring suspension
	Headset	OV850	25.4/34.0/30.0, 35.0 mm stack height
Controls	Handlebars	Steel	25.4 mm stem clamp dia.
		Width	540
	Stem	Steel	TIG welded
		Length	105
		Degrees rise	15
		Insertion	135
	Shifters	GripShift MRX-100	
	Brake levers	C•Star 271	Resin w/reach adjusters
	Grips	Fisher Hex	Kraton
Saddle		Fisher	"SuperSoft" foam
	Seatpost	Steel	26.6 mm diameter
		Length	300
	Seat binder		M6 x 23.5 Cro-Moly
Brakes		Shimano Altus C90	
Drivetrain	Crankset	SR 28/38/48 w/riveted rings	
		Length	165
	BB	YST 611NW	73/D3N
	Pedals	Wellgo	Nylon ATB with Cro-Moly spindles
	F. derailleur	Shimano Tourney	Down pull, 28.6 mm / 1 1/8"
	R. derailleur	Shimano Acera-X	
	Freewheel	Shimano HG50-C	11-28 7 speed
	Chain	KMC HP70	
Wheelset	Hubs	JoyTech	Nutted f & r, threaded, 135 mm O.L.D.
	Rims	Weinmann 4019	
	Tires	Maxxis	24 x 2.1
	Tubes	Schraeder valve	
	Spokes	Chrome plated	36 front and rear
		Front	240 15ga.
		Rear- D/ND	234/238 15ga.
Weight		27.9 lbs. (17.4 kg)	
Color		Black	

Three Steps to Selling a Maniac

1) The Maniac shares the design of the Tyro with the fully proportionate frame and component fit needed by smaller riders. The Maniac's lower stem rise puts the rider in a slightly more aggressive position.

2) The SR DuoTrack suspension fork adds comfort to the ride. More comfort means less fatigue and better bike control.

3) The Maniac uses Maxxis tires on Weinmann rims for lots of stability at low weight, and with aggressive traction.

Upgrades from the Tyro

More Cro-Moly means a lighter frame
SR DuoTrack fork for comfort
More aggressive Maxxis tires for better traction
Upgraded GripShift and rear derailleur for better shifting
21 speeds with wider ratio and a higher top end

Geometry and Fit

	11.5
A. Head angle	70.5
B. Seat angle	74.5
C. Effective top tube	525
D. Chainstay length	394
E. Bottom bracket ht.	277
F. Offset	37
G. Wheelbase	981
Trail	69
Standover height	640
Reach	612
Head tube length	85

Mechanic's Notes

Those little clear plastic things-

When assembling Gary's U.S. made bikes, you'll notice that we no longer include the protective cable sheathing for along the top tube. Instead, look in the baggy with the brake straddlewires. You'll find three sets of three tiny, clear plastic donuts which break apart to slide over the top tube cables to protect the frame. With the slotted housing stops, these new top tube bumpers also allow easy lubrication of the cables for best performance.

Suspension Ready Geometry-

Except for the Tyro, Marlin, and Tassajara, all Gary's bikes are suspension ready. However, the different performance levels of bikes are designed to work with different ranges of forks.

The imported Gary Fisher bikes are built for a fork like the SR DuoTrack which offers somewhat less travel than high-end forks and also incorporates some sag into its design. The axle to fork crown race dimension on these bikes is designed accordingly.

The US steel and aluminum bikes are built for forks with longer travel like Rock Shox or air/oil forks with an axle to fork crown race seat dimension of 408-426 mm.

Some variation of these specifications will not significantly alter the performance of Gary Fisher bikes. Its more important to note that a suspension upgrade to Gary's bikes will still yield the good trail manners Gary intended.

ACSD AntiChain Suck Device-

Unfortunately, the ugliness of chainsuck is an off-road fact of life. Even with the best equipment in great shape, a little mud can stick a chain to a chainring in nothing flat. The Gary Fisher ACSD is the best protection there is for protecting chainstays.

If the chainrings are bent or misaligned, it is critical that they be straightened before adjusting the ACSD. Position the ACSD plate so that there is between 1 and 2 mm of clearance between the ACSD and any part of the chainrings. Tighten the ACSD adjusting bolts. Test ride the bike to make sure the chainrings do not rub under deflection.

ACSD fender mounting bracket-

If a rider wants to install fenders on a mountain bike, most full coverage fenders require a bottom bracket mounting location. Since some of Gary's bikes have no chainstay bridge, we designed a fender mounting bracket which fits between the ACSD and the chainstays (GFCG Part Number T940091).

OCLV bikes and their seatposts-

With Gary's OCLV models, a special seat lug design means that you should not grease the seapost.

With most bikes, greasing the seatpost is done to prevent rust or oxidization of the frame which could cause the seatpost to seize inside the frame.

Inside the OCLV bikes' seat lug is a thin lining of fiberglass. Fiberglass is used here to prevent galvanic corrosion, a chemical reaction between carbon fiber and aluminum. Since fiberglass does not rust, there is no need for grease, and none is recommended.

Compact Fork Design-

On the Tyro and the 13" sizes of the Marlin and Tassajara, a special compact fork design is used. This fork uses a shorter axle to crown race dimension so that the head tube can be moved down and the top tube moves down with it. The head tube cannot be shortened to lower the top tube because a minumum head tube length is required to allow the quill of the stem to fully insert for safety. The compact fork design is how Gary has added additional standover for these small frame sizes.

BAU (Brake Actuator Unit) - Women's frame model

There is also a BAU for Fisher women's frames. This device avoids unwanted friction which can come from using a roller or excessive housing to route the cable around the dropped top tube, up the seat tube, and back down to the brakes.

To adjust a BAU on a women's model, follow these instructions:

1. Install the rear brake cable in the lever and follow the normal cable routing to the BAU.
2. Loosen the set screw in the adjustable cable-end and thread the cable through the small hole.
3. Place the adjustable cable end in the hook of the BAU. Position the BAU so that a line intersecting the center of the cable end and the BAU pivot is perpendicular (90°) to the brake cable.
4. Tighten the set screw to clamp the cable.
5. Attach the barrel end of the short brake cable (standard ATB style) to the end of the BAU with the enclosed "eye."
6. Attach the brake straddlewire carrier to the short brake cable, attach the straddlewire, and adjust as usual.
7. The short brake cable should also form a 90° angle with the BAU.

Gary Fisher Frame Design

Gary has spent many years cycling, especially off-road. He's ridden in many areas of the U.S. and the world, Seen lots of sights. Ridden in lots of different conditions. Over the years, Gary's saddle time has taught him lots of likes and dislikes in a bicyde. He's learned what works and what doesn't work.

Not that Gary is the only one in the world who likes to ride. But Gary also likes to tinker. Over time, lots of people have been in situations where they wondered why their bike didn't completely fulfill their needs. But when faced with such a situation, Gary had the talent and has taken the time to seek answers to the questions left unanswered by others. In fact, that's how he invented Mountain Bikes in the first place, and that's how the Gary Fisher frame design came about.

Gary wanted a bike that would climb, descend, and handle the most technical terrain with ease. There are actually a lot of small things which went into Gary's design, but here are a few of the most noticeable:

Ultrashort 16.5 inch chainstays. By tucking the rear wheel in under the rider more than other bikes, Gary's design puts more weight on the rear wheel. Most riders already know that this helps give suction cup climbing. But it also means better rear wheel braking. And allows the rider to move weight off the front wheel easier when lifting it over a ditch or log. The problem with such short stays is wheel and chainring clearance, which Gary solved with his Hipstay design.

HipStays. By using a special bend in the chainstays, Gary has managed to leave enough room for the rear wheel , but also provide room for the chainrings and a proper chainline. If the rear wheel picks up mud, or gets a little tweaked, it can still roll through the rear triangle. And proper chainline is important for good shifting and smooth chain action.

Steeper angles. One of the hardest parts of mountain bike design is getting the steering right. On the one hand, you want a bike that is rock solid at high speed in the roughest conditions. On the other, you want it nimble at low speeds, and no wheel flop on steep climbs.

These two needs are difficult to balance. By playing with the angles and offset of the bike, combined with the weight distribution, Gary has found the optimum balance.

How did he do it? Gary actually built a fully adjustable bike. Virtually all facets of performance could be tuned, from bottom bracket height to head angles. Then Gary applied his considerable saddle time and 'feel' to find the prefect combination. The result is a bike with steeper angles than most, with a slightly modified trail. Combined with other Gary Fisher features, Gary's design works really well. Then he took what he had learned and adapted it to a whole range of sizes, including small bikes with 24 inch wheels.

In addition to the steering, Gary also focused on efficiency on the bike. By using a slightly steeper seat tube than others, the transition from sitting to standing is very smooth on a Fisher bike. This allows the rider to change position without breaking traction, a really important feature in changing terrain.

Modified top tube and head tube lengths. So Gary mastered the mountain bike's technical handling. But at the same time, he wanted his bike to be comfortable. Gary is no stranger to the laid-out aerodynamic position of road bikes, having been one of the best road racers in the U.S. at one time. But off road, Gary wanted to see the sights, and sometimes still pedals for more hours in a day than most folks would consider normal. So he opted for a slightly more upright position than some mountain bikes offer. He combined this taller head tube with a carefully chosen top tube length to give lots of cockpit room so the rider can move around and balance the bike better in technical terrain.

Its important to note that when comparing top tubes, Gary's design will actually ride 'bigger' than others because of the steeper seat tube angles. With a steeper seat tube, the rider does not need to move forward as much when standing to get their weight over the bottom bracket when compared to other designs.

Cables routed to make things work better. With many bikes, the cable routing is selected mostly to make the bike easier to build. Gary has gone to the extra expense of designing the cable routing with performance in mind first. With smooth lines to all the cables, slotted stops, and top tube routing, every Gary Fisher bike will get the most performance possible form the derailleurs and brakes. With Gary's design the cables are easy to service and have a minimum of friction. Gary's attention to detail may not be as noticeable on new bikes, but as the miles roll along (and the water, gunk, etc. accumulate), it means that its easy to keep a Fisher bike running like new.

Bullet housing stops. Its attention to detail that sets Gary's bikes apart. Little things like using tapered and rounded 'bullet' cable stops to prevent snagging of your clothes. There's a lot more common-sense design hidden in the tubing specs, cable stop placement, etc. that all comes form Gary's experience as a rider and the inventor of Mountain Bikes.

All Gary's bikes are this way. With many manufacturers, you only get their 'best' design when you buy their most expensive bikes. Gary believes that everyone, from first timer to veteran racer, will benefit from his innovations. That why you'll find these features on Gary's least expensive full sized bike, the Marlin, or even on the 24 inch wheeled Tyro.

Marlin

General Specs

Sizes			13	15.5	16.75	18	19.5
Frameset	Frame	Double-butted Cro-Moly main triangle, Hi-Tensile stays, TIG welded					
	Fork	Cro-Moly	Threaded, w/ forged dropouts (Compact on 13")				
	Headset	OV-850	25.4/34.0/30.0, 35.0 mm stack height				
Controls	Handlebars	Steel	25.4 stem clamp diameter				
		Width	560	560	560	560	560
	Stem	Steel	TIG welded, black				
		Length	105	105	115	130	145
		Degrees rise	15	15	15	15	15
		Insertion	150	150	150	150	150
	Shifters	GripShift MRX-100					
	Brake levers	Lee Chi G300	w/reach adjusters				
	Grips	Fisher Hex	Kraton				
Saddle		Fisher	"SuperSoft" foam (women's on 13" and 15.5")				
	Seatpost	SP262	26.6 mm diameter				
		Length	300	300	350	350	350
	Seat binder		M6 x 55				
Brakes		Shimano Altus C90					
Drivetrain	Crankset	Shimano Acera-X	24/34/42 with riveted rings				
		Length	170	170	175	175	175
	BB	BB-LP25	73/113				
	Pedals	Wellgo	Nylon ATB w/Cro-Moly spindles				
	F. derailleur	Shimano Acera-X	Top pull, 28.6 mm / 1 1/8"				
	R. derailleur	Shimano Acera-X GS					
	Freewheel	Shimano HG30	11-28 7 speed				
	Chain	KMC HP70					
Wheelset	Hubs	Joy Tech	QR, HyperGlide cassette, 135 mm O.L.D.				
	Rims	Weinmann 4019					
	Tires	Tioga Psycho	26 x 1.95 (27 TPI)				
	Tubes	Schraeder valve					
	Spokes	Chrome plated	36 front and rear				
		Front	265 15ga.				
		Rear- D/ND	262/264 15ga.				
Weight		28.2 lbs. (12.8 kg)					
Color		Titanium or Blue					

Geometry and Fit

	13	15.5	16.75	18	19.5
A. Head angle	71.0	71.0	71.5	71.5	71.5
B. Seat angle	74.5	74.0	74.0	73.5	73.5
C. Effective top tube	540	554	568	583	597
D. Chainstay length	420	420	420	420	420
E. Bottom bracket ht	288	288	292	292	292
F. Offset	38	38	38	38	38
G. Wheelbase	1014	1025	1037	1048	1063
Trail	74	74	71	71	71
Standover height	703	751	767	784	815
Reach	628	642	664	692	719
Head tube length	85	105	125	145	165

Three Steps to Selling a Marlin

1) The Marlin has Gary's proven geometry for the right handling. The Marlin's full Cro-Moly frame is light and strong, and the double butted tubing makes it lively and shock absorptive. Super short 16.5 inch chainstays make for excellent traction, both climbing and stopping. Clean cable routing makes all the parts, like the GripShift shifters, work their best. Gary didn't miss a single detail on this one.

2) The wheels include Weinmann alloy rims which are light and strong, and add stopping power. The Psycho tires are light for good acceleration and climbing, and the extra wide footprint means more traction.

3) The Marlin is comfortable. The saddle is comfy while allowing efficient pedaling and the ability to slide back on steep descents. GripShift and brake levers with reach adjusters make shifting and braking easy. With Gary's design the rider's position is more upright without sacrificing control in gnarly terrain.

Tassajara

General Specs

Sizes			13	15.5	16.75	18	19.5
Frameset	Frame	Double-butted Cro-Moly, TIG welded					
	Fork	Cro-Moly	Threaded, w/ forged dropouts (Compact on 13")				
	Headset	OV-850	25.4/34.0/30.0, 35.0 mm stack height				
Controls	Handlebars	Butted 6061 T6 aluminum (170 gm) 25.4 stem clamp diameter					
		Width	560	560	560	560	560
	Stem	Cro-Moly	TIG welded, silver				
		Length	105	105	120	135	150
		Degrees rise	15	15	15	15	15
		Insertion150	150	150	150	150	
	Shifters	GripShift SRT-400					
	Brake levers	Lee Chi G300	w/reach adjusters				
	Grips	Fisher Hex	Kraton				
Saddle		Fisher	"SuperSoft" foam (women's on 13" and 15.5")				
	Seatpost	SP262	26.6 mm diameter				
		Length	300	300	350	350	350
	Seat binder		M6 x 55				
Brakes		Shimano Acera-X					
Drivetrain	Crankset	Shimano Alivio	24/34/42 w/67 mm bolt hole circle				
		Length	170	170	175	175	175
	BB	BB-LP25	73/113				
	Pedals	Victor	Resin body with steel cage, clips and straps				
		Clip size	M	M	L	L	L
	F. derailleur	Shimano Acera-X	Top pull, 28.6 mm / 1 1/8"				
	R. derailleur	Shimano STX GS					
	Freewheel	Shimano IG50	11-28 7 speed				
	Chain	Shimano IG50					
Wheelset	Hubs	Shimano Acera-X	(R) QR, HyperGlide cassette, 135 mm O.L.D.				
		Joy Tech	(F) QR				
	Rims	Weinmann 4019					
	Tires	Tioga Psycho	26 x 1.95 (60 TPI, 600 gm)				
	Tubes	Schraeder valve					
	Spokes	Stainless	36 front and rear				
		Front	265 15ga.				
		Rear- D/ND	262/264 15ga.				
Weight		27.9 lbs. (12.7 kg)					
Color		Steel Blue, Black, or Red					

Geometry and Fit

	13	15.5	16.75	18	19.5
A. Head angle	71.0	71.0	71.5	71.5	71.5
B. Seat angle	74.5	74.0	74.0	73.5	73.5
C. Effective top tube	540	554	568	583	597
D. Chainstay length	420	420	420	420	420
E. Bottom bracket ht	288	288	292	292	292
F. Offset	38	38	38	38	38
G. Wheelbase	1014	1025	1037	1048	1063
Trail	74	74	71	71	71
Standover height	703	751	767	784	815
Reach	628	642	669	696	723
Head tube length	85	105	125	145	165

Three Steps to Selling a Tassajara

1) The Tassajara is a full Cro-Moly version of the frame and fork of the Marlin, plus with improved components. On the drivetrain these include the GripShift SRT-400, Shimano Alivio crank, and STX rear derailleur. On the wheels, you get stainless spokes which won't rust. You also get alloy bars and a Cro-Moly stem.

2) The Tassajara has Shimano's new Interactive Glide (IG) system. This includes the chain, freewheel, crank, and rear derailleur. With IG, you get smooth, 'shockless' shifting both up and down in cog size.

3) The Tassajara is lighter, even though is has toe clips and straps.

Upgrades from the Marlin

GripShift SRT-400 and the IG System gives smoother, more accurate shifting.
Full Cro-Moly frame is lighter and stronger.
Stainless steel spokes will not rust. • Alloy bars and Cro-Moly stem are stronger and lighter.
Acera-X brakes offer increased stopping power.
Toe clips and straps offer increased pedaling efficiency.

Rangitoto

General Specs

Sizes			15.5	16.75	18	19.5
Frameset	Frame	Double-butted Cro-Moly	TIG welded			
	Fork	SR DuoTrack	elastomer suspension			
	Headset	OV-850	25.4/34.0/30.0, 35.0 mm stack height			
Controls	Handlebars	6061 T6 aluminum	Butted, 25.4 stem clamp diameter			
	Bar ends	Bonded aluminum				
		Width	580	580	580	580
	Stem	Cro-Moly	TIG welded, black			
		Length	105	120	135	150
		Degrees rise	15	15	15	15
		Insertion	150	150	150	150
	Shifters	GripShift SRT-400				
	Brake levers	Lee Chi G300	W/reach adjusters			
	Grips	Fisher Hex	Kraton			
Saddle		Fisher	"SuperSoft" foam (women's on 15.5")			
	Seatpost	SP262	26.6 mm diameter			
		Length	300	350	350	350
	Seat binder		M6 x 55			
Brakes		Shimano Acera-X				
Drivetrain	Crankset	Shimano Alivio	24/34/42 w/ 67 mm bolt hole circle			
		Length	170	175	175	175
	BB	BB-LP25	73/113			
	Pedals	Victor	Resin body with steel cage, clips and straps			
		Clip size	M	L	L	L
	F. derailleur	Shimano Acera-X	Top pull, 28.6 mm / 1 1/8"			
	R. derailleur	Shimano STX GS				
	Freewheel	Shimano IG50	11-28 7 speed			
	Chain	Shimano IG50				
Wheelset	Hubs	Shimano Acera-X	(R) QR, HyperGlide cassette, 135 mm O.L.D.			
		Joy Tech	(F) QR			
	Rims	Bontrager BCX-3				
	Tires	Tioga Psycho	26 x 1.95 (60 TPI, 600 gm)			
	Tubes	Schraeder valve				
	Spokes	Stainless	36 front and rear			
		Front	267 15ga.			
		Rear- D/ND	264/265 15ga.			
Weight		29.1 lbs. (13.2 kg)				
Color		Team Colors or Ballistic Blue				

Geometry and Fit

	15.5	16.75	18	19.5
A. Head angle	71.0	71.5	71.5	71.5
B. Seat angle	74.0	74.0	73.5	73.5
C. Effective top tube	554	568	583	597
D. Chainstay length	420	420	420	420
E. Bottom bracket ht	288	292	292	292
F. Offset	38	38	38	38
G. Wheelbase	1025	1037	1048	1063
Trail	74	71	71	71
Standover height	756	770	790	822
Reach	642	669	696	723
Head tube length	105	125	145	165

Three Steps to Selling a Rangitoto

1) The Rangitoto, the Tassajara, and the Marlin are all suspension ready, so the steering angles remain correct when a suspension fork is installed.

2) The SR DuoTrack suspension fork adds comfort to the ride. With suspension, the rider can relax while the front wheel does the up and down moving over bumps. This means less energy is used by the rider so they feel less fatigue at the end of a ride. Also it means that the front wheel stays on the ground more for better control in steering and braking.

3) The Rangitoto includes bar ends, which really help the rider get leverage when climbing. They also help the rider distribute their weight for maximum traction.

Upgrades from the Tassajara

SR DuoTrack suspension fork adds comfort for control and less fatigue.
Bar ends provide extra hand positions which help climbing.
Bontrager BCX rims are light, strong, and feature machined sidewalls for improved braking.

Made in the U.S.A.- Cro-Moly Steel

Gary is very proud that so many of his bikes are built in the U.S. There are a lot of reasons, best generalized as Quality, Attention to Detail, and Less Environmental Impact.

Quality

Over the years, Gary has had bikes built in many factories. They each offered different benefits to his customers, but none completely satisfied Gary's desire for perfection. Although he was able to do most of the things needed to achieve the level of performance desired, none of these previous factories could manufacture a bike with all the details Gary wanted. They either couldn't supply the tubing, or they couldn't get the right paint colors. Sometimes it was a struggle to keep the quality up to Gary's standards. And in most overseas factories, the environment and the worker's health were low on the list of priorities.

Most of Gary's bikes are now being built in the U.S. Since his first meeting with the folks at this new factory, Gary has been impressed.

At first, Gary expected to meet the usual opposition to his ideas. Gary knew his designs would require extra work to get the geometry the way he wanted it. HipStays require extra bending. His angles and tube lengths are different, requiring different jigs and fixtures. He wanted better quality welds than those offered by other manufacturers. He wanted his drop-outs brazed, rather than welded, so they could be replaced or repaired if necessary. And he even wanted different tube dimensions and butting. It was a long list, and Gary expected the meeting to be a tough one.

To his surprise, every time Gary asked for another feature, the engineers at the meeting said "We can do that". Then they gave him a tour of the factory and showed him some new manufacturing techniques they had been working on. The manufacturing capability went beyond anything Gary had asked for.

Gary was truly impressed, and your customers will be as well when they ride one of these new Gary Fisher bikes. The quality of workmanship is flawless, so that Gary's designs come shining through as if Gary had made each one himself, by hand.

High Tech Welding

Many bikes are TIG welded (TIG = Tungsten Inert Gas), which means that while an electric arc from a Tungsten welding tip brings the frame tubes to their melting point, an Inert Gas (gas without oxygen) is flowed over the red-hot part of the molten frame tubes. This gas keeps oxygen from combining chemically with the steel, which would weaken the frame. When the molten steel cools, the tube joint become a solid, single piece. But Gary Fisher's process makes for a better quality welded bike.

First Gary designs the geometry of the bike. Then, working with True Temper, the high quality American Cro-Moly tubing manufacturer, he specs the tubing. This includes special tube sizes and thicknesses. Radical butting. Good stiffness to strength to weight ratios. Stuff that makes Gary Fisher bikes stronger and ride better, but keeps them light.

That's just the start. For accurate welded frames, the tubing lengths and miters should be really exact. Miters are the funny looking curves cut into the tubing ends to make two tubes fit together smoothly. If a miter is done right, the frame is more accurate and the frame joint is stronger.

Most factories use a punch or a mill to miter their tubes. Either one leaves sharp, ragged edges to the tube, and as the cutter wears, its not as accurate so the tube lengths can vary. The miters in Gary's U.S. Cro-Moly bikes are cut with a laser, so the tubing is cut with a beam of light. It never wears, and because its controlled by a computer its really accurate.

Also, the tube is always cut at a 90° angle to the tube wall, so its always got a thick edge for better welding. When you weld, you actually melt the tube a bit. After it cools the melted portions are like one piece. If you welded the thin, feathered edge of a machine miter, it won't be as strong as welding the entire thickness of the tubing wall. With laser mitering, the welder always works with an edge as thick as the entire tubing wall. Also, the 90° edge makes a little gap that lets heat penetrate into the joint better. Better heat penetration means a more complete weld, and that means more frame strength.

Another technique adding quality to Gary's bikes is the use of size specific jigs. A jig is a special device that holds the tubing in place while you weld it. Other factories use adjustable jigs so that they can build more models and brands of bikes, without having a lot of money tied up in jigs. But when you adjust them, there's a lot of error possible. With Gary's size specific jigs, every frame that comes down the line is exactly like the last one, because you can't change the jig. With this system, you never see frames with the wrong angles or dimensions.

Then its time to do the welding. Each Gary Fisher frame is sequentially welded by hand. When you apply high heat to a metal, it tends to warp, sort of like the way a cookie sheet twists and pops in the oven. By following a special order, or sequence, of welds as the frame is assembled the warping is controlled by making the frame pull itself back into alignment. Its time consuming, but with the lightweight tubing Gary specs, you don't want to do a lot of cold setting to the frames. Also, remember the part of TIG where you keep the oxygen away from the molten steel? By only doing part of each joint and letting it cool while the gas flows over it, the welder does a better job of keeping the oxygen away from the red hot weld zone. If you went all the way around each joint with your welder, some material would still be red hot when exposed to the oxygen in the air.

After one of the welders has completed a frame, he or she stamps their initials into the bottom bracket shell. That's so we can monitor their work. Every single frame that comes from the welders is checked for alignment on a light table, plus they're also checked thoroughly for uniformity and good looks. This is basically the same thing a high quality custom builder would do.

But after this visual check, we go the extra mile to guarantee frame quality. Frames are randomly checked throughout every shift with dye penetrant testing and even X-Ray. These special procedures show up things you can't see with the naked eye. If there's ever a problem, every frame done by a particular welder can be checked more thoroughly, because their initials are on the bottom bracket shell as well as the quality control card we keep for every frame.

True Temper Tubing

Although all Gary's U.S. Cro-Moly bikes share the same geometry and are all made from True Temper Cro-Moly tubing, their frames are still different.

The Aquila and Hoo Koo E Koo use double butted tubing in their frames. By using a thin tube with ends that are thicker, material can be removed in low stress zones (like the middle of the tube). Less material means less weight, but also allows the bike to feel more lively and shock absorptive. The thick ends add strength near the joints where these is greater stress, and also leave more material for a beefier weld.

The Cronus features triple butted tubing in the main triangle. By using three butt thicknesses instead of two, additional weight can be removed from the frame, while maintaining the strength required for hard riding.

Gary's U.S. Cro-Moly bikes also have hidden features, like internal reinforcements in the head tube and seat tube to reinforce these critical areas while allowing the use of really light weight and oversize tubing. Seat stays are butted so that there is more material under the cantilever bosses, giving the brakes on Gary's bikes extra stopping power. The rear dropouts have a special shape so that the stays don't have to be crimped or dented at the dropout. The list goes on.

The Benefits of Steel

Although newer "high-tech" materials seem to do a better job attracting media attention, steel has a well deserved reputation as the king of bicycle tubing. Steel has been used for bikes since their first invention. Its durable and reliable. Its easy to work (cut, drill, file, weld, bend, braze, etc.). And using steel allows fabrication of a structure which is strong and stiff.

The only place steel gives any advantage to these new materials is in the weight department. The density of steel is greater than aluminum or titanium, and especially compared to carbon composite.

New steel alloys (like Cro-Moly) and heat treated steels have helped some. Hi-Tensile steel, Cro-Moly steel, and heat treated versions of Cro-Moly steel all have about the same modulus (stiffness). Some steel alloys are stiffer, but aren't being used for bicycles because they may be brittle, or other reasons. The real difference between Hi-Tensile steel and Cro-Moly is the strength.

By using Cro-Moly you can increase a bike's strength, and with stronger material less is required. This helps steel bikes in two ways. First, you can reduce the weight. Second, since less material is required, you can remove some of the stiffness of the frame (a good steel frame is already more than stiff enough) which adds to the liveliness and shock absorption. These are similar advantages as those gained by double or triple butting the tubes: Less weight and a more lively ride.

Aquila frame weight (17.5"): **2350 gm (5.17 pounds)** (including 100 grams of paint)
Cronus frame weight (17.5"): **2130 gm (4.69 pounds)** (including 100 grams of paint)

Aquila

General Specs

Sizes			11.5	15.5	17.5	19	20.5
Frameset	Frame	True Temper triple-butted Cro-Moly, TIG welded					
	Fork	Cro-Moly	Threaded, w/ forged dropouts				
	Headset	Tange Seiki OV-21	25.4/34.0/30.0, 34.3 mm stack height				
Controls	Handlebars	System 1	6061 T6 bulged aluminum, 25.4 mm stem clamp dia.				
		Width	560	560	560	560	560
	Bar ends	System 1	Bonded aluminum				
	Stem	System 1	TIG welded Cro-Moly				
		Length	90	105	120	135	150
		Degrees rise	10	10	15	15	15
		Insertion	140	140	165	165	165
	Shifters	GripShift SRT-600					
	Brake levers	Dia-Compe PC-7	w/reach adjusters				
	Grips	Fisher Hex	High density foam				
Saddle		Fisher	"SuperSoft" foam (women's on 11.5" and 15.5")				
	Seatpost	System 1	6061 T6 aluminum, 27.2 mm diameter				
		Length	300	300	350	350	350
	Seat binder	System Steel	31.8 mm clamp w/integral quick release				
Brakes		Shimano STX					
Drivetrain	Crankset	Shimano STX	22/32/42 w/58/94 mm bolt hole circle				
		Length	170	170	175	175	175
	BB	BB-LP25	73/113				
	Pedals	System 1	Resin body with alloy cage, clips and straps				
		Clip size	M	M	L	L	L
	F. derailleur	Shimano STX	Top pull, 31.8 mm / 1 1/4"				
	R. derailleur	Shimano STX GS					
	Freewheel	Shimano IG50	11-28 7 speed				
	Chain	Shimano IG50					
Wheelset	Hubs	Shimano STX (R)	Compact HyperGlide cassette, 135 mm O.L.D.				
		System 2 (F)	12 mm suspension axle				
	Rims	Bontrager BCX-3					
	Tires	Tioga Psycho-KS	26 x 1.95, racing tread, steel bead				
	Tubes	Presta valve					
	Spokes	Stainless	32 front and rear				
		Front	271 14ga.				
		Rear- D/ND	269/270 14ga.				
Weight		26.7 lbs. (12.1 kg)					
Color		P.C. Green					

Geometry and Fit

	11.5	15.5	17.5	19	20.5
A. Head angle	70.5	71.0	71.5	71.5	71.5
B. Seat angle	73.5	74.0	74.0	73.5	73.5
C. Effective top tube	542	554	568	583	597
D. Chainstay length	420	420	420	420	420
E. Bottom bracket ht	285	288	292	292	292
F. Offset	38	38	38	38	38
G. Wheelbase	1012	1025	1036	1048	1064
Trail	77	74	71	71	71
Standover height	675	733	766	803	840
Reach	628	642	669	696	723
Head tube length	90	90	105	145	185

Three Steps to Selling an Aquila

1) The Aquila is made in the U.S.A. with True Temper- tubing for a premium quality Cro-Moly frame. It uses Gary Fisher geometry for outstanding performance.

2) The Aquila has the new Interactive Glide (IG) system from Shimano. This includes the chain, freewheel, crank, and rear derailleur. With IG, you get smooth, 'shockless' shifting both up and down in cog size. With the GripShift SRT 600, you also can shift with a flick of the wrist shift, requiring less movement from the rider than any other shifting system.

3) The Aquila has a light, strong wheelset with grippy Psycho KS tires.

Upgrades from the Rangitoto

U.S. built frame is light and strong. • STX equipment and the GripShift SRT-600 shifters add shifting precision and stopping power. • Psycho KS tires have more open tread pattern which is lighter and faster. • System Components help reduce weight for a total of 1.5 pounds.

Hoo Koo E Koo

General Specs

Sizes			11.5	15.5	17.5	19	20.5
Frameset	Frame	True Temper triple-butted Cro-Moly, TIG welded					
	Fork	Rock Shox Quadra 21	elastomer suspension				
	Headset	Dia-Compe ST-2 AheadSet	25.4/34.0/30.0, 25.5 mm stack height				
Controls	Handlebars	System 1	6061 T6 bulged aluminum, 25.4 mm stem clamp dia.				
		Width	560	560	560	560	560
	Bar ends	System 1	Bonded aluminum				
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated				
		Length	90	105	120	135	150
		Degrees rise	10	10	10	10	10
		Steerer clamp height	41 mm				
	Shifters	GripShift SRT-600					
	Brake levers	Dia-Compe PC-7	w/reach adjusters				
	Grips	Fisher Hex	High density foam				
Saddle		Bontrager	Black				
	Seatpost	System 1	6061 T6 aluminum, 27.2 mm diameter				
		Length	300	300	350	350	350
	Seat binder	System Steel	31.8 mm clamp w/ integral quick release				
Brakes		Shimano STX					
Drivetrain	Crankset	Shimano STX	22/32/42 w/58/94 mm bolt hole circle				
		Length	170	170	175	175	175
	BB	BB-LP25	73/113				
	Pedals	System 1	Resin body w/ alloy cage, clips and straps				
		Clip size	M	M	L	L	L
	F. derailleur	Shimano STX	Top pull, 31.8 mm / 1 1/4"				
	R. derailleur	Shimano STX GS					
	Freewheel	Shimano IG60	11-28 7 speed				
	Chain	Shimano IG50					
Wheelset	Hubs	Shimano STX	Compact HyperGlide cassette, 135 mm O.L.D.				
		System 2 (F)	12 mm suspension axle				
	Rims	Bontrager BCX-3					
	Tires	Tioga Psycho-KS	26 x 1.95, racing tread, steel bead				
	Tubes	Presta valve					
	Spokes	Stainless	32 front and rear				
		Front	271 14ga.				
		Rear- D/ND	269/270 14ga.				
Weight		27.0 lbs. (12.1 kg)					
Color		Slate or Limited Edition Grateful Dead					

Geometry and Fit

	11.5	15.5	17.5	19	20.5
A. Head angle	70.5	71.0	71.5	71.5	71.5
B. Seat angle	73.5	74.0	74.0	73.5	73.5
C. Effective top tube	542	554	568	583	597
D. Chainstay length	420	420	420	420	420
E. Bottom bracket ht	285	288	292	292	292
F. Offset	38	38	38	38	38
G. Wheelbase	1012	1025	1036	1048	1064
Trail	77	74	71	71	71
Standover height	675	733	766	803	840
Reach	628	642	669	696	723
Head tube length	90	90	105	145	185

Three Steps to Selling a Hoo Koo E Koo

1) The Hoo Koo E Koo has a high quality U.S. built True Temper Cro-Moly frameset with Gary's design. It climbs, descends, and corners like a dream.

2) The Hoo Koo E Koo has a Rock Shox Quadra 21 elastomer suspension fork that has external pre-load adjusters so its easy to dial in just the right stiffness.

3) The Hoo Koo E Koo has the new Interactive Glide (IG) system from Shimano. This includes the chain, freewheel, crank, and rear derailleur. With IG, you get smooth, 'shockless' shifting both up and down in cog size.

4) A portion of the Grateful Dead Limited Edition profits goes to the Dead's Rex Foundation to benefit the environment, public health, and other important causes.

Upgrades from the Aquila

Rock Shox Quadra 21 elastomer suspension fork adds comfort for less fatigue and better control.
Bontrager saddle allows easy movement in technical sections. • AheadSet steering system is very stiff, adding steering control.

Cronus

General Specs

Sizes			11.5	15.5	17.5	19	20.5
Frameset	Frame	Triple-butted True Temper heat Treated OX-3 Cro-Moly, TIG welded					
	Fork	Rock Shox Judy XC-L micro-cellular urethane elastomer suspension					
	Headset	Dia-Compe SA-2	25.4/34.0/30.0, 26.5 mm stack height				
Controls	Handlebars	System 2	6061 T6 butted aluminum, 25.4 mm stem clamp dia.				
		Width	560	560	560	560	560
	Bar ends	Fisher	Welded aluminum				
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated				
		Length	90	105	120	135	150
		Degrees rise	10	10	10	10	10
		Steerer clamp height	41 mm				
	Shifters	GripShift SRT-800 X-Ray					
	Brake levers	Dia-Compe PC-7	w/reach adjusters				
	Grips	Fisher Hex	High density foam				
Saddle		Bontrager	Black				
	Seatpost	System 2	2014 aluminum, 27.2 mm diameter				
		Length	300	300	350	350	350
	Seat binder	System Steel	31.8 mm clamp w/integral bolt				
Brakes		Shimano LX					
Drivetrain	Crankset	Sugino Impel 700	22/32/42 w/58/94 mm bolt hole circle				
		Length	170	170	175	175	175
	BB	Shimano BB-UN51	73/113				
	Pedals	Onza	Clipless, 6° float				
	F. derailleur	Shimano LX	Top pull, 31.8 mm / 1 1/4"				
	R. derailleur	Shimano XT GS					
	Freewheel	Shimano CS-70	11-28 8 speed				
	Chain	Shimano HG70					
Wheelset	Hubs	Shimano LX (R)	Compact HyperGlide cassette, 135 mm O.L.D.				
		System 3 (F)	17 mm aluminum suspension axle				
	Rims	Bontrager BCX-2					
	Tires	Tioga Psycho-K	26 x 1.95, racing tread, Kevlar bead				
	Tubes	Presta valve					
	Spokes	Sapim stainless	Double butted, 32 front and rear				
		Front	270 14/15ga.				
		Rear- D/ND	268/269 14/15ga.				
Weight		25.2 lbs. (11.4 kg)					
Color		Team Colors					

Geometry and Fit

	11.5	15.5	17.5	19	20.5
A. Head angle	71.0	71.5	71.5	71.5	71.5
B. Seat angle	73.5	74.0	74.0	73.5	73.5
C. Effective top tube	542	554	568	583	597
D. Chainstay length	420	420	420	420	420
E. Bottom bracket ht	285	288	292	292	292
F. Offset	38	38	38	38	38
G. Wheelbase	1012	1025	1036	1048	1064
Trail	77	74	71	71	71
Standover height	675	733	766	803	840
Reach	628	642	669	696	723
Head tube length	90	90	105	145	185

Three Steps to Selling a Cronus

1) The Cronus's Heat Treated triple-butted True Temper OX-3 tubing makes this a really light steel bike, with the extra snap and liveliness Gary Fisher's best bikes are known for. The Rock Shox Judy XC-L suspension fork adds even more comfort.

2) The GripShift X-Ray shifters provide easy, ergonomic shifting over 24 speeds with LX derailleurs. The GripShift system allows changing gears with the least movement of any shifting system.

3) A competition level wheelset with Psycho K Kevlar beaded tires, Sapim double butted stainless spokes, and Bontrager BCX-2 rims means lower rolling weight for faster accelerations and sprints. The Psycho K tires also add traction for all round great handling.

Upgrades from the Hoo Koo E Koo

OX-3 frame is about 1/2 pound lighter, and livelier. • LX and XT derailleurs shift an 8 speed cassette for more gear selection. • The Psycho K tires, BCX-2 rims, and double butted spokes mean lighter wheels for better accelleration. • Rock Shox Judy XC-L fork is very plush for extra comfort with more control and less fatigue. • Onza clipless pedals provide better foot attachment to the bike for added control and power.

Suspension Technology

For the '95 Gary Fisher bicycles, you'll find a lot of suspension. To help you understand and sell the differences between the various shocks used on our bikes, we offer the following explanations:

SR DuoTrack 7005

The DuoTrack has proven itself to be a solid performer in the recreational category. We hear discussions about whether this level of suspension is worthwhile. Our answer is that the primary benefit of suspension is comfort for the rider, and the DuoTrack does that very nicely. Extra comfort means less fatigue, so the rider doesn't get as tired. This also means the rider can better control the bike. So yes, its worthwhile.

The DuoTrack uses a coil steel spring. Its a little heavier than an elastomer spring, but offers a linear spring rate so the fork's entire travel is usable. New this year are elastomer bumpers for both top-out and bottom-out, so if the rider does manage to max the fork out, its much quieter. Like last year, its also possible to switch to a lighter elastomer spring supplied by SR.

Rock Shox Quadra 21

The Rock Shox Quadra 21 fork is very similar to the Quadra 10 found on the 1994 Hoo Koo E Koo. The new Quadra 21 has 48 mm of travel, and also uses a one-piece urethane elastomer. However, the preload is adjustable by hand with external adjusters at the top of each stanchion.

Rock Shox Quadra 21 R

The Supercaliber uses a Rock Shox Quadra 21R. This fork is a hybrid, using the body of a Quadra and the MCU elastomers from the Judy technology to offer 60 mm of plush travel.

Other features include the crown and alloy steerer from a Mag 21 SL and a magnesiom fork brace. With all these weight saving details, the Quadra 21R is the lightest Rock Shox fork in '95!

Rock Shox Judy XC-L

New technology from Rock Shox, this fork has many great features. For a spring, it uses an MCU (Micro Cellular Urethane) elastomer stack with hand operated preload adjuster at the top of each fork leg. Because the elastomer stack is comprised of several separate pieces of different durometers, its also possible to change-out the pieces to further modify the stiffness if desired.

The left leg uses a hydraulic (oil) damping cartridge which is permanently sealed.

Improvements this year include oversized fork legs and a recessed brake arch to resist twisting during braking. Fork leg overlap and bushing separation have more than doubled. These improvements give this fork incredible lateral rigidity and steering control. This control, combined with the plush, comfortable ride, make this a VERY nice fork.

Working on the fork is extremely easy. The press fit bushings and seals of air/oil designs are gone. Since the damping unit is in cartridge form, and the fork uses MCU springs, your customer can easily disassemble this fork in a matter of minutes.

On all Gary Fisher models with the Judy XC fork, Gary has specified the long travel version, the XC-L. Rather than 50 mm of travel, the XC-L has 63.5. This design allows a very plush ride and tons of travel, yet its hard to bottom out.

Rock Shox Judy SL

This fork shares the features of the XC-L including travel. However, the SL is lighter and has adjustable compression damping. Weight savings come from the use of titanium hardware and an aluminum alloy steerer. The damping cartridge, located in the lower portion of the left leg, is adjustable using a 2 mm allen key, as shown in the Gary Fisher Owner's Manual.

The Advantages of Lower Weight: Aluminum

One of the first question we seem to always ask about a bike is "How much does it weigh?" The answer can sound a lot like a fishing story and although its usually somewhere close to the truth, weight has become so important in bicycling that the truth is often stretched just to impress others or bolster egos.

Have you ever asked yourself why the weight of a bike is so important? Its easy to answer that it makes the bike ride better. Or you could make light of the question by saying that light bikes are easier to put on a roof rack. Most shop guys know the old joke "At our store, we don't carry that brand because none of us are strong enough".

So how did we get so worried about weight in the first place? Lets look back a few years. In the "olden days", light weight road bikes were made of steel using a lugged and brazed construction. Brazing allowed the use of thin walled tubing, while the welding technology of the time required much thicker tubes for adequate weld strength. Since butting, due to it's cost, was restricted to expensive racing bikes, these inexpensive welded bikes were stuck with heavy straight gauge tubesets. A common weight for this type of bike was around 35-40 pounds (boy have we come a long way!).

While a 35 pound bike required more effort to pedal, the real problem was how they rode. The thicker tubing was very stiff, and had no resiliency to give life to the bike so they felt dead. This feel was not because of the weight itself, but because the frame was built with thick tubing which wouldn't absorb shock and couldn't transmit road feel.

So here's the key: Generally, better bikes use stronger materials in the frame. Since the materials are stronger, you need less of them, so the tubing can be made thinner overall. In addition, butting a tube removes material from the middle of the tube which further thins out the tubing walls without effecting the strength of the bike. As we thin out the tubing walls, we add liveliness to the frame for a better ride. And the weight comes down.

So there you have it, lighter bikes ride better. But rather than their lower weight, its because their frames have a better feel. But there are other ways to effect the feel of a bike besides just changing the weight. The design and materials of the frame (and even the quality of manufacturing) can make a difference in how a bike rides.

Removing weight without removing performance.

Although we'd all agree that lighter is better, we'd also agree that this is only true if you don't give up any performance in the trade. Bikes that are whippy, weak, or whimpy are to be shunned regardless of how they tip the scales.

So how do you remove the most weight possible while maintaining performance? An easy answer not available to bike designers just a few years ago is the use of high tech materials like aluminum, titanium, or carbon fiber. Of these, aluminum has shown itself to be the most cost effective.

Aluminum

The use of aluminum, or more correctly aluminum alloys, has allowed reductions in bike weights while actually enhancing some performance characteristics of the bike. Aluminum alloys have a low density, or weight per unit volume, so you can use more material and still reduce the weight of a comparable steel bike by about a pound.

Another advantage of aluminum is that you can easily make larger or different tube shapes and incorporate more radical butting. This allows an aluminum bike to better address the particular stiffness and strength requirements of a bicycle frame.

The end result of using aluminum is a lightweight bike with excellent stiffness and strength characteristics. This can be done at a reasonable cost, because aluminum alloys are not much more expensive than Cro-Moly steel. A further benefit of aluminum is its inherent vibration absorbing qualities, adding comfort to the ride as an extra bonus.

New Features for '95

Of course, not all aluminum bikes are the same. Gary has spec'd specific tube diameters and wall thicknesses to optimize the benefits of aluminum. By specing 6061, not only are Gary's bikes light and strong, but they also have high fatigue resistance. 6061 exhibits a much better elongation, or ductility, than 7005 aluminum for a longer life.

Obvious examples of Gary's advanced thinking is the Evolution steering system, which adds steering precision and frame strength while reducing overall weight. The head tube is externally reinforced to provide more support for the headset.

Fisher aluminum bikes use a special seat cluster design with a welded insert in the top of the seat tube. This inset allows more beef for all the welds at the seat cluster, while resisting deformation from the heat. It also reinforces this area, and allows the use of a 27.2 seat post with a large diameter, thin-walled seat tube. Other details easily seen on Fisher bikes are the replaceable derailleur hanger, the AntiChainSuckDevice, and the large reinforcing gusset under the down tube. Still, a Gary Fisher aluminum frame is very light at just 3.9 pounds.

Kaitai

General Specs

Sizes			14	16	17.5	19.5
Frameset	Frame	6061 T6 aluminum	TIG welded			
	Fork	Cro-Moly Evolution				
	Headset	Tange Seiki ST-2	28.6/37.0/33.0, 29.0 mm stack height			
Controls	Handlebars	System 1	6061 T6 bulged aluminum, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	System 1	Bonded aluminum			
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated			
		Length	90	105	120	135
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-600				
	Brake levers	Dia-Compe PC-7	W/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Fisher	'Supersoft' foam			
	Seatpost	System 1	6061 T6 aluminum, 27.2 mm diameter			
		Length	300	300	350	350
	Seat binder	System Aluminum	35 mm clamp w/quick release			
Brakes		Shimano Alivio				
Drivetrain	Crankset	Shimano STX	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shmano BB-LP25	73/113			
	Pedals	System 1	Resin body w/alloy cage, clips and straps			
		Clip size	M	M	L	L
	F. derailleur	Shimano STX	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano STX GS				
	Freewheel	Shimano IG50	11-28 7 speed			
	Chain	Shimano IG30				
Wheelset	Hubs	Shimano Alivio (R)	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 2 (F)	12 mm suspension axle			
	Rims	Bontrager BCX-3				
	Tires	Tioga Psycho-KS	26 x 1.95, racing tread, steel bead			
	Tubes	Presta valve				
	Spokes	Stainless	32 front and rear			
		Front	265 14ga.			
		Rear- D/ND	262/264 14ga.			
Weight		26.0 lbs. (11.7 kg)				
Color		Matte Ice Copper				

Geometry and Fit

	14	16	17.5	19.5
A. Head angle	71.0	71.5	71.5	71.5
B. Seat angle	74.0	74.0	73.5	73.5
C. Effective top tube	554	568	583	597
D. Chainstay length	420	420	420	420
E. Bottom bracket ht	287	292	292	292
F. Offset	38	38	38	38
G. Wheelbase	1028	1040	1051	1065
Trail	74	71	71	71
Standover height	723	762	772	812
Reach	642	669	696	723
Head tube length	105	125	145	165

Three Steps to Selling a Kaitai

1) The Kaitai's aluminum frame is light and shock absorptive. It also uses all Gary's design features, including the Evolution steering system.

2) The Kaitai has STX equipment with GripShift for easy shifting and super stopping power. STX includes the new IG system for quiet, shockless shifting both to bigger and smaller gears.

3) The Kaitai has a light and aggressive wheelset with Bontrager rims and Psycho tires.

Upgrades from the Aquila

Aluminum frame is lighter for efficiency. Aluminum is also very shock absorptive.

The Kaitai is about 3/4 pounds lighter.

Montare

General Specs

Sizes			14	16	17.5	19.5
Frameset	Frame	6061 T6 aluminum	TIG welded			
	Fork	Quad butted Cro-Moly Evolution				
	Headset	Tange Seiki ST-2	28.6/37.0/33.0, 29.0 mm stack height			
Controls	Handlebars	System 2	6061 T6 butted aluminum, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	System 1	Bonded aluminum			
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated			
		Length	90	105	120	135
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-600				
	Brake levers	Dia-Compe PC-7	w/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager	Black			
	Seatpost	System 1	6061 T6 aluminum, 27.2 mm diameter			
		Length	300	300	350	350
	Seat binder	System Aluminum	35 mm clamp w/ quick release			
Brakes		Shimano STX-RC				
Drivetrain	Crankset	Shimano STX-RC	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shimano BB-LP25	73/113			
	Pedals	System 2	Alloy body and cage, sealed, w/clips and straps			
		Clip size	M	M	L	L
	F. derailleur	Shimano STX-RC	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano STX-RC				
	Freewheel	Shimano IG60	11-28 7 speed			
	Chain	Shimano IG50				
Wheelset	Hubs	Shimano STX-RC	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 2 (F)	12 mm suspension axle			
	Rims	Bontrager BCX-2				
	Tires	Tioga Psycho-KS	26 x 1.95, racing tread, steel bead			
	Tubes	Presta valve				
	Spokes	Sapim stainless	Double butted, 32 front and rear			
		Front	265 14/15ga.			
		Rear- D/ND	262/264 14/15ga.			
Weight		24.9 lbs. (11.3 kg)				
Color		Ballistic Blue				

Geometry and Fit

	14	16	17.5	19.5
A. Head angle	71.0	71.5	71.5	71.5
B. Seat angle	74.0	74.0	73.5	73.5
C. Effective top tube	554	568	583	597
D. Chainstay length	420	420	420	420
E. Bottom bracket ht	287	292	292	292
F. Offset	38	38	38	38
G. Wheelbase	1028	1040	1051	1065
Trail	74	71	71	71
Standover height	723	762	772	812
Reach	642	669	696	723
Head tube length	105	125	145	16

Three Steps to Selling a Montare

1) The Montare's aluminum frame is light and shock absorptive. It also uses all Gary's design features, including the Evolution steering system.

2) This bike rides well enough, and is light enough, to be considered a full race bike. But at this low price, its also an incredible value package.

3) Shimano STX-RC offers a 22T inner chainring for easy low gear climbing, uses the IG system for smooth shifting both up and down the gear range, and is really easy to use with GripShift shifting.

Upgrades from the Kaitai

The quad-butted Cro-Moly fork is lighter and livelier.
STX-RC components are lighter and include extra features.
The BCX-2 rims, double butted spokes, and System 2 handlebars are lighter while still providing excellent durability.
The Bontrager saddle allows the rider to move around on the bike more easily in technical terrain.

Paragon

General Specs

Sizes			14	16	17.5	19.5
Frameset	Frame	6061 T6 aluminum,	TIG welded			
	Fork	Rock Shox Quadra 21	Elastomer suspension			
	Headset	Tange Seiki ST-2	28.6/37.0/33.0, 29.0 mm stack height			
Controls	Handlebars	System 2	6061 T6 butted aluminum, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	Fisher	Welded aluminum			
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated			
		Length	90	105	120	135
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-800	X-Ray			
	Brake levers	Dia-Compe PC-7	W/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager	Black			
	Seatpost	System 2	2014 aluminum, 27.2 mm diameter			
		Length	300	300	350	350
	Seat binder	System Aluminum	35 mm clamp w/quick release			
Brakes		Shimano LX				
Drivetrain	Crankset	Shimano LX	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shimano UN51	73/113			
	Pedals	Onza	Clipless, 6° float			
	F. derailleur	Shimano LX	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano XT				
	Freewheel	Shimano HG70	11-28 8 speed			
	Chain	Shimano HG70				
Wheelset	Hubs	Shimano LX (R)	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 3 (F)	17 mm aluminum suspension axle			
	Rims	Bontrager BCX-2				
	Tires	Tioga Psycho-K	26 x 1.95, racing tread, Kevlar bead			
	Tubes	Presta valve				
	Spokes	Sapim stainless	Double butted, 32 front and rear			
		Front	265 14/15ga.			
		Rear- D/ND	262/264 14/15ga.			
Weight		25.0 lbs. (11.3 kg)				
Color		Black Sable				

Geometry and Fit

	14	16	17.5	19.5
A. Head angle	71.0	71.5	71.5	71.5
B. Seat angle	74.0	74.0	73.5	73.5
C. Effective top tube	554	568	583	597
D. Chainstay length	420	420	420	420
E. Bottom bracket ht	287	292	292	292
F. Offset	38	38	38	38
G. Wheelbase	1028	1040	1051	1065
Trail	74	71	71	71
Standover height	723	762	772	812
Reach	642	669	696	723
Head tube length	105	125	145	16

Three Steps to Selling a Paragon

1) The Paragon's aluminum frame is light and shock absorptive. It also uses all Gary's design features, including the Evolution steering system.

2) The Paragon includes race-ready options like the Quadra 21 suspension fork for control, Onza clipless pedals for more powerful pedal action, Kevlar beaded tires for lighter weight, and 8 speed X-Ray shifting for more gear selection (24).

3) Shimano LX is lighter and stronger, and includes features like 8 speed gear selection, cartridge style cantilevers for stronger stops, and two alloy chainrings for lower weight.

Upgrades from the Montare

GripShift SRT-800 X-Ray offers more gear choices.
Shimano LX is lighter and stronger, and XT rear derailleur is even more so.
Rock Shox Quadra 21 suspension fork adds comfort for better control and less fatigue.
Onza clipless pedals provide better control and power. • Psycho K tires use Kevlar beads for lower weight.

Mt. Tam

General Specs

Sizes			14	16	17.5	19.5
Frameset	Frame	6061 T6 aluminum,	TIG welded			
	Fork	Rock Shox Judy XC-L micro-cellular urethane elastomer suspension				
		Headset	Tange Seiki ST-2	28.6/37.0/33.0, 29.0 mm stack height		
Controls	Handlebars	Bontrager Titec	2014 T6 aluminum, bulged, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	Fisher	Welded aluminum			
	Stem	Fisher	TIG welded Cro-Moly Ahead, Heat Treated			
		Length	90	105	120	135
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-800 X-Ray				
	Brake levers	Dia-Compe PC-11	w/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager Integra	Railless, leather cover, 176 grams			
	Seatpost	System 2	2014 aluminum, 27.2 mm diameter			
		Length	300	300	350	350
	Seat binder	System Aluminum	35 mm clamp w/quick release			
Brakes		Shimano LX				
Drivetrain	Crankset	Shimano LX	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shimano UN51	73/113			
	Pedals	Onza	Clipless, 6° float			
	F. derailleur	Shimano LX	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano XT				
	Freewheel	Shimano HG70	11-28 8 speed			
	Chain	Shimano HG70				
Wheelset	Hubs	Shimano LX (R)	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 3 (F)	17 mm aluminum suspension axle			
	Rims	Bontrager BCX-2				
	Tires	Tioga Psycho-K	26 x 1.95, racing tread, Kevlar bead			
	Tubes	Presta valve				
	Spokes	Sapim stainless	Double butted, 32 front and rear			
		Front	265 14/15ga.			
		Rear- D/ND	262/264 14/15ga.			
Weight		24.6 lbs. (11.2 kg)				
Color		Polished Aluminum				

Geometry and Fit

	14	16	17.5	19.5
A. Head angle	71.0	71.5	71.5	71.5
B. Seat angle	74.0	74.0	73.5	73.5
C. Effective top tube	554	568	583	597
D. Chainstay length	420	420	420	420
E. Bottom bracket ht	287	292	292	292
F. Offset	38	38	38	38
G. Wheelbase	1028	1040	1051	1065
Trail	74	71	71	71
Standover height	723	762	772	812
Reach	642	669	696	723
Head tube length	105	125	145	165

Three Steps to Selling a Mt. Tam

1) The Mt. Tam shares the Gary Fisher geometry, but with a distinctive polished aluminum look. It includes a Rock Shox Judy XC-L suspension fork for comfort resulting in better control and less fatigue.

2) The Shimano LX drivetrain with XT rear derailleur and 8 speed GripShift X-Ray shifters gives excellent gear selection over all 24 gears.

3) Full-race features include lighter weight options like Kevlar beaded tires and the extra control and pedaling power of Onza clipless pedals.

Upgrades from the Paragon

Judy XC-L suspension fork has 63.5 mm of travel for a plusher ride and the 150 mm fork tube overlap means extra lateral rigidity for even better steering control.

Titec bars, Dia-Compe PC-11 brake levers, and Integra saddle further reduce the weight while enhancing comfort.

The Bontrager Integra saddle weighs just 176 grams due to its railless design which also allows shock absorption through flexibility at the nose and back.

The polished frame of the Mt. Tam is 60 grams lighter because there is no paint.

Space Age Bicycles: OCLV

Gary Fisher OCLV bikes are built by Trek, a manufacturer with a proven track record manufacturing carbon fiber bicycles started in 1986. Using already proven bonding techniques, Trek avoided a lot of the problems that other bike manufacturers had with carbon production. They also did a lot of R&D to make sure that Gary Fisher bikes get the best carbon composite possible.

Composite means you have two or more visibly different components made into a single material with the best attributes of both components. In this case, the two components are the carbon fibers and a matrix of glue (epoxy) holding the fibers in place.

A carbon fiber is a long strand of carbon molecules which looks something like a black hair. There are a lot of ways you can get the carbon molecules to join together with different results, like higher modulus, or stiffness. There are also different kinds of carbon fibers, and different materials used to bind the fibers into a composite.

With the material used for Gary Fisher OCLV bikes, the matrix is mostly a thermoset epoxy, with just a bit of thermoplastic mixed in. This blend has the lowest weight, and highest strength and stiffness available. Other composites used in bikes today include fiberglass/carbon fiber mix in thermoset, or carbon fiber with thermoplastic matrix. The biggest difference in all these different composite materials and their uses is how the carbon fibers are oriented, and how close together they are. This has a lot to do with the end results of stiffness, strength, and weight, and that's what sets OCLV out in front of the pack.

Optimum **C**ompaction means that the carbon fibers are compressed just the right amount in the epoxy for the best strength possible. If you have too much or too little epoxy, you don't get full strength out of the composite. Voids are any inconsistencies in the composite, like air bubbles or epoxy pockets. Again, Any voids would mean lowered strength. The term **L**ow **V**oid is an engineering term meaning that less than 2% of the composite is voids. The process used in Gary Fisher OCLV bikes commonly gets in under 1%, which is better than aircraft specifications.

The OCLV process benefits the bike structure in several ways. If you maximize the strength and stiffness of a material, you can use less of it, and produce a lighter structure with the strength and stiffness you need. The real key to these incredible bikes is the control over the fibers in the matrix resulting from the OCLV process.

With a round, cylindrical tube, its fairly easy to control the fiber orientation and compaction. The fibers can be placed on a mandrel, or steel cylinder, and then pressed tightly in place from the outside. After curing, you can pull the mandrel out from the tube. But you can't do that with a complex shape like a lug. Only the OCLV process allows the fibers to be placed right where they are supposed to be.

Some people criticize the use of lugs with carbon fiber saying bikes with lugs are weak. If the lug and tube only touched at their ends, that would be true. But Gary's OCLV bikes have highly-engineered lugs and tubes with a precision tapered overlapping design with a very large bond area, plus the lugs are designed so that the stress is spread over a large area, and away from the highest stress areas found near the tubing joints of a bike.

As for the criticism that the glue in the bond is inherently weak, you have to remember that in carbon fiber composite, the material ITSELF is glued together. As long as the bond is of the same precision as the parts you are bonding, there is no weak point.

That explains why OCLV frames are the lightest around (just 2.75 pounds), yet fully capable of hard core racing.

New Details for '95

Every year, we tweak and tune. For 1995, we've answered your requests to use internal threaded water bottle mounts, while satisfying our need for complete structural integrity of the frame. Along with that, we've changed to top tube routed cables to avoid mud build-up and cable friction.

We've also tuned the tubeset a bit. We've added a bit more bottom bracket rigidity through the use of filament wound tubing which has more torsional strength.

By avoiding the large metal plates of the older water bottle studs, removing the chain hanger (although a good idea at first, it was an invitation for the consumer to unnecessarily damage their bike), and double butting the aluminum head tube insert we've eliminated another 80 grams. (After some research, one magazine determined that substituting titanium parts on a bike cost $3 per gram, so in 'titanium dollars' that's a $240 savings to your customer). Now the Gary Fisher OCLV frameset (in a 17.75 size) weighs a mere 2.75 pounds!

Supercaliber

General Specs

Sizes			14.75	16.25	17.75	19.25
Frameset	Frame	OCLV carbon composite				
	Fork	Rock Shox Quadra 21R micro-cellular urethane elastomer suspension				
	Headset	Tioga DL2	25.4/ 34.0/ 30.0, 27.0 mm stack height			
Controls	Handlebars	Bontrager Titec	2014 T6 aluminum, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	Fisher	Welded aluminum			
	Stem	Control Tech	6061 T6 aluminum Ahead			
		Length	120	130	140	150
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-800 X-Ray				
	Brake levers	Dia-Compe PC-11	w/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager Integra	Railless, leather cover (176 grams)			
	Seatpost	System 2	2014 aluminum, 27.2 mm diameter			
		Length	300	350	350	350
	Seat binder	System OCLV	w/ integral bolt			
Brakes		Shimano LX				
Drivetrain	Crankset	Shimano LX	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shimano BB UN71	73/113			
	Pedals	Onza	Clipless, 6° float			
	F. derailleur	Shimano LX	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano XT				
	Freewheel	Shimano HG70	11-28 8 speed			
	Chain	Shimano HG70				
Wheelset	Hubs	Shimano LX (R)	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 3 (F)	17 mm aluminum suspension axle			
	Rims	Bontrager BCX-2				
	Tires	Tioga Psycho-K	26 x 1.95, racing tread, Kevlar bead			
	Tubes	Presta valve				
	Spokes	Sapim stainless	Double butted, 32 front and rear			
		Front	265 14/15ga.			
		Rear- D/ND	262/264 14/15ga.			
Weight		23.8 lbs. (10.8 kg)				
Color		P.C. Green				

Geometry and Fit

	14.75	16.25	17.75	19.25
A. Head angle	70.5	71.0	71.0	71.0
B. Seat angle	73.0	73.0	73.0	73.0
C. Effective top tube	581	591	594	599
D. Chainstay length	424	424	424	424
E. Bottom bracket ht	298	298	298	298
F. Offset	37	37	37	37
G. Wheelbase	1051	1060	1063	1070
Trail	79	76	76	76
Standover height	723	741	764	799
Reach	686	705	716	730
Head tube length	110	110	123	159

Three Steps to Selling a Supercaliber

1) The OCLV frame on the Supercaliber is the lightest production mountain bike frame in the world at just 2.75 pounds. Even though its so light, its still plenty stiff to give great handling and excellent power transfer. The Rock Shox Quadra 21R is also the lightest off-road fork made by Rock Shox this year, for a really light combined frame weight.

2) The LX drivetrain with XT rear derailleur and 8 speed GripShift X-Ray shifters makes shifting easy and accurate. Hands never have to leave the bars.

3) The Supercaliber has all the extras and light weight goodies for high performance cycling- Rock Shox forks, Onza pedals, Kevlar tires, Fisher bar ends, Bontrager Integra saddle,....

Upgrades from the Mt. Tam

OCLV frame is stiff, yet a pound lighter than the aluminum Paragon.
Control Tech alloy stem is light and stiff.

Procaliber

General Specs

Sizes			14.75	16.25	17.75	19.25
Frameset	Frame	OCLV carbon composite				
	Fork	Rock Shox Judy XC-L micro-cellular urethane elastomer suspension				
	Headset	Tioga DL2	25.4/ 34.0/ 30.0, 27.0 mm stack height			
Controls	Handlebars	Bontrager Titec	2014 T6 aluminum, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	Bontrager Titec 130	Magnesium			
	Stem	Control Tech	6061 T6 aluminum Ahead			
		Length	120	130	140	150
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-800 X-Ray				
	Brake levers	Dia-Compe PC-11	w/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager Integra	Railless, leather cover (176 grams)			
	Seatpost	System 2	2014 aluminum, 27.2 mm diameter			
		Length	300	350	350	350
	Seat binder	System OCLV	w/ integral bolt			
Brakes		Shimano XT				
Drivetrain	Crankset	Sugino Mighty 900	22/32/42 w/ 58/94 mm bolt hole circle			
		Length	170	175	175	175
	BB	Shimano BB-UN71	73/113			
	Pedals	Onza	Clipless, 6° float			
	F. derailleur	Shimano XT	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano XT				
	Freewheel	Shimano HG90	11-28 8 speed			
	Chain	Shimano HG90				
Wheelset	Hubs	Shimano XT (R)	Compact HyperGlide cassette, 135 mm O.L.D.			
		System 3 (F)	17 mm aluminum suspension axle			
	Rims	Bontrager BCX-1				
	Tires	Tioga Psycho-LTD	26 x 1.95, Cyclex casing, Kevlar bead (470 grams)			
	Tubes	Presta valve				
	Spokes	Sapim stainless	Double butted, 32 front and rear			
		Front	265 14/15ga.			
		Rear- D/ND	262/264 14/15ga.			
Weight		23.1 lbs. (10.5 kg)				
Color		Flat Copper				

Geometry and Fit

	14.75	16.25	17.75	19.25
A. Head angle	70.5	71.0	71.0	71.0
B. Seat angle	73.0	73.0	73.0	73.0
C. Effective top tube	581	591	594	599
D. Chainstay length	424	424	424	424
E. Bottom bracket ht	298	298	298	298
F. Offset	37	37	37	37
G. Wheelbase	1051	1060	1063	1070
Trail	79	76	76	76
Standover height	723	741	764	799
Reach	686	705	716	730
Head tube length	110	110	123	159

Three Steps to Selling a Procaliber

1) The OCLV frame on the Procaliber is the lightest production mountain bike frame in the world at just 2.75 pounds. Even though its so light, its still plenty stiff to give great handling and excellent power transfer.

2) The XT derailleurs with 8 speed GripShift X-Ray shifters makes shifting easy and accurate. Hands never need leave the bars.

3) The Procaliber has all the extras and light weight goodies for high performance cycling- Rock Shox forks, Onza pedals, Psycho LTD tires (470 gm), Bontrager bar ends, Bontrager Integra saddle (176 gm),....

Upgrades from the Supercaliber

Rock Shox Judy XC-L suspension fork is lighter with more lateral stiffness, offers cartridge-style oil damping for more energy control.
More Shimano XT parts means better performance, longer life for the parts.
Psycho LTD tires on lighter BCX-1 rims means lighter wheels for better accelleration and speed.
Sugino Mighty 900 crank is cold forged for higher strength, less weight, and a lower 'Q' factor.

Procaliber Ltd.

General Specs

Sizes			14.75	16.25	17.75	19.25
Frameset	Frame	OCLV carbon composite				
	Fork	Rock Shox Judy SL	MCU elastomer w/adj. compression damping			
	Headset	Tioga DL-2	25.4/ 34.0/ 30.0, 27.0 mm stack height			
Controls	Handlebars	Bontrager Titec	Butted titanium, 25.4 mm stem clamp dia.			
		Width	560	560	560	560
	Bar ends	Bontrager Titec 130	Magnesium			
	Stem	Control Tech	6061 T6 aluminum Ahead			
		Length	120	130	140	150
		Degrees rise	10	10	10	10
		Steerer clamp height	41 mm			
	Shifters	GripShift SRT-800 X-Ray	w/ Gore RideOn cable system			
	Brake levers	Grafton Re-Entry	w/reach adjusters			
	Grips	Fisher Hex	High density foam			
Saddle		Bontrager Integra	Railless, leather cover (176 grams)			
	Seatpost	Bontrager	Carbon fiber w/aluminum head. 27.2 mm diameter			
		Length	300	350	350	350
	Seat binder	System OCLV	w/ integral bolt			
Brakes		Machine Tech				
Drivetrain	Crankset	White Industries	w/Sugino SuperShift II rings, 22/32/42 w/ 58/94 mm bolt hole circle			
		Length	172.5	175	175	177.5
	BB	White Industries	Titanium, 73/113			
	Pedals	Onza Ti	Clipless, 6° float			
	F. derailleur	Shimano XT	Top pull, 34.9 mm / 1 3/8"			
	R. derailleur	Shimano XT				
	Freewheel	Shimano HG90	11-28 8 speed			
	Chain	Shimano HG90				
Wheelset	Hubs	White Industries	Tracker front, w/Salsa Flip-Offs Compact HyperGlide cassette, 135 mm O.L.D.			
	Rims	Bontrager BCX	Red front, Blue rear			
	Tires	Tioga Psycho-LTD	26 x 1.95, Cyclex casing, Kevlar bead (470 grams)			
	Tubes	Presta valve				
	Spokes	Wheelsmith	Stainless, double butted, 32 f & r, alloy nipples			
		Front	265 15/17ga.			
		Rear- D/ND	262/264 15/17ga.			
Weight		21.1 lbs. (9.5 kg)				
Color		Black Sable				

Geometry and Fit

	14.75	16.25	17.75	19.25
A. Head angle	70.5	71.0	71.0	71.0
B. Seat angle	73.0	73.0	73.0	73.0
C. Effective top tube	581	591	594	599
D. Chainstay length	424	424	424	424
E. Bottom bracket ht	298	298	298	298
F. Offset	37	37	37	37
G. Wheelbase	1051	1060	1063	1070
Trail	79	76	76	76
Standover height	723	741	764	799
Reach	686	705	716	730
Head tube length	110	110	123	159

Three Steps to Selling a Procaliber Ltd.

1) The OCLV frame on the Procal Ltd. is the lightest production mountain bike frame in the world at just 2.75 pounds. Even though its so light, its still plenty stiff to give great handling and excellent power transfer.

2) The XT derailleurs with 8 speed GripShift X-ray shifters and Gore RideOn cable system makes shifting easy and accurate. Hands never have to leave the bars.

3) The Procaliber Ltd. has all Gary's favorite trinkets for ultra-light weight- Onza pedals with titanium spindles, White hubs and cranks, Machine Tech brakes, Salsa quick releases (Ti rear skewer, but steel front for maximum suspension rigidity), Bontrager rims with Wheelsmith spokes.

Upgrades from the Procaliber

Judy SL suspension fork has adjustable compression damping. • RideOn cable system makes derailleur cables extremely smooth and friction free, and seals them from dirt or mud.

White Industries cranks and hubs are extremely light weight, as are the Onza Ti pedals, Machine Tech cantis, Grafton brake levers, Wheelsmith spokes and alloy nipples, Bontrager Red and Blue rims, Salsa FlipOffs, and Bontrager Ti bars. This bike is still fully raceable, though, thanks to Gary's seat of the pants testing and discriminating tastes.

Misc. Specs '95- Tioga, Onza, GripShift, Sugino

Gary Fisher bikes use a lot of special specs. We'd like to make sure that you understand the differences between what others use and Gary's special selections from the same companies.

Tioga tires

Tioga uses a variety of descriptor letters along with the names of their tires. These can be confusing, so here we'll try to straighten it out:

Psycho- 1.95 casing width with the tread width more like that of a 2.1. Recommended tire mounting has the front chevrons pointing forwards, and the rear chevrons pointing rearwards (when on top of the wheel).

K- Slightly rounded tread blocks, with more spacing between the knobs. Lighter and faster. (Yeah, we thought it meant Kevlar, too.) The Psycho K weighs 540 grams.

S- Steel bead. The Psycho KS weighs 580 grams.

R- Amber or blond colored, softer tread (and we thought it was R for Racing)

II- Denser tread pattern for durability

Psycho Ltd.- Uses a Cyclex casing with kevlar beads resulting in a very low weight of just 470 grams.

Onza pedals

Onza pedals offer a lot of features not found on other clipless systems. First of all, they're very light. Especially the Ti model used on the Procal Ltd.

Onza pedals also offer 6° float, or rotation. Float means there is free motion at the heel even when the cleat is securely attached at the pedal. This motion allows a more ergonomic interface (translation: better for your knees) between foot and pedal. It also means that adjusting the cleats is much, much easier for the rider, so they'll get their feet in a position which allows powerful pedaling. Without float, you can spend literally weeks trying to get those little cleats adjusted to just the right angle. What a pain!

Onza pedals offer a very simple release adjustment. By simply installing a stiffer or softer elastomer pad set in each pedal, you can vary the stiffness of entry and exit to individual taste. And the setting stays put.

Standard pedal weight:	355 grams
Titanium axle pedal weight:	295 grams

GripShift

Gary has spec'd the entire '95 line with GripShift shifters. On the Tyro, the simplicity and reliability of GripShift are much better than the millions of parts (and the cost cutting used to get the price down) used in other shifting systems. Another benefit of GripShift on the Tyro is that its shifted using bigger muscles (wrist instead of finger and thumb) so its easier for small hands to operate.

At the high end, other shifting systems are much more refined with better materials and construction. However, you can't beat GripShift for the least movement required of the rider to change gears. Its just easier to use.

New features for '95 include less rotation of the front shifter to change gears. The 400 shifter also requires less rotation than last year's 500. This means less hand movement to shift over all three rings. The new 600 and 800 use even less rotation than the 400.

A new metal spring used in the 600 and 800 provides a more positive click which won't wear out. These two models are also fully sealed to prevent dirt or water from reducing the shifting accuracy.

On the 600 and 800, the shifter has been shortened, plus the shifter now flares into the shift body. This provides better hand contact and additional comfort.

The X-Ray design on the 800 is a direct result of racer feedback. Rather than know exactly which gear they are in, racers want to know when they are about to shift into the last cog of the freewheel. Rather than numbers, a simple bar indicator tells the rider at a glance where they are relative to the end of the cassette. With the X-Ray system, its much easier to see just where you are, especially compared to trying to read numbers on a bumpy descent.

With the 400, 600, and 800 model shifters, GripShift makes two front shifter designs. One option offers three positive clicks corresponding to each chainring. The option Gary has chosen offers a ratchet or 'friction' shift. This allows the rider to better trim the front derailleur as they shift over the range of the cassette. With the super short chainstays used on Gary Fisher bikes, easier trimming makes this is a much better system.

Sugino cranks

Gary has spec'd Sugino cranks on a variety of his top-end models. Sugino cranks have the advantages of low weight and low 'Q-Factor'. A low Q-Factor means the pedals are closer to the bike's centerline, so they rider's feet are closer together. With the feet closer together, more pedaling force can be applied so you can go faster, and balance on the bike is also quicker. In addition, the Mighty 900 cranks on the Procaliber are cold forged, a process Shimano uses on their XTR cranks. Cold forging adds strength to the aluminum so more weight can be removed.

Shimano Group Comparison

	Acera-X	Alivio	STX	STX-RC	LX	XT
Materials						
Aluminum	•	•	•	•	•	•
Steel	•	•	•			
Resin	•	•				
Front derailleur						
Top Swing design	•	•	•			
Rear derailleur						
Advanced Light Action	•	•	•	•	•	•
IG		•	•	•		
Cantilevers						
M-System	•	•	•	•	•	•
Easy access cable bolt	•	•	•	•	•	•
Bushing-type mounting					•	•
AntiVibration System	•	•	•	•		
Stainless nuts and bolts	•	•	•	•	•	•
Cartridge brake pad				•	•	•
Cranksets						
HyperDrive-C	•	•	•	•	•	•
Bolt on type chainrings		•	•	•	•	•
# of alloy rings				1	2	2
SGX-II rings	•	IG	IG	IG		
8 mm fixing bolt		•	•	•	•	•
Hubs						
Parallax	•	•	•	•	•	•
Aluminum QR			•	•	•	•
IG cassette		•	•	•		
Stainless ball bearings						•
Suspension front axle			•	•	•	•
Aluminum axle						F
Aluminum spider w/steel cogs						•
Number of cogs	7	7	7	7	8	8
11T compatible	•	•	•	•	•	•

Gary's Dream

or

I'm Not in Love With My Car

While we spend a great deal of time talking about how fun bike riding is, we don't always talk about how darn practical it is. Gary's dream is a futuristic Utopia where everyone rides their bike instead of driving a car. In this far off world, we don't need thousands of acres of pavement to park. We don't need 4 or 6 or 8 lanes of freeway taking up some of the most liveable land in our neighborhoods. We can get around easier with no parking hassles. The air will be cleaner. It will be quieter. And we'll all be healthier.

Sound far out? Its already happening in some parts of the world (or maybe we should say its *still* happening). In some European countries, bikes far outnumber cars.

Its easy to say that bike commuting is difficult in the U.S. But a recent study showed that over 90% of the U.S. population lives less than 5 miles from their work place. And in many cases, the time required to get to the office on a bike is actually less than in a car considering normal traffic and parking. At peak traffic, a bike is much faster.

So you already knew all that? Good. Then you already understand why Gary has come out with a line of Hybrids. Because they're great bikes for commuting.

Hybrids use wide, stable tires which add comfort and durability to the lightweight wheels used on road bikes. They put the rider in an upright position which is comfortable, even in street clothes. It also allows good visibility and maneuverability, important for dealing with folks who haven't figured out that its easier to leave the car at home.

Gary's hybrids offer ergonomic GripShift shifting over 21 speeds, so the rider can conquer any city terrain. And cantilever brakes offer the stopping power necessary for avoiding the cities' obstacles.

So think of your bike as more than recreation. Its transportation.

Zebrano

General Specs

Sizes			13	15	17	19	21	15.5W	18.5W
Frameset	Frame	Cro-Moly main	with Hi-Tensile stays TIG welded						
	Fork	Cro-Moly	Forged dropouts						
	Headset	HP01H	22.2/ 30.0/ 27.0, 35.5 mm stack height						
Controls	Handlebars	Steel	25.4 mm stem clamp dia.						
		Width	560	560	560	560	560	560	560
	Stem	Steel	TIG welded						
		Length	80	100	100	100	120	100	100
		Degrees rise	25	25	25	25	25	25	25
		Insertion	150	150	150	150	150	150	150
	Shifters	GripShift MRX-100							
	Brake levers	Lee Chi G301	Alloy w/ reach adjusters						
	Grips	Fisher Hex	Kraton						
Saddle		Fisher	"Supersoft" foam						
	Seatpost	Alloy	w/micro-adjust, 26.6 mm diameter						
		Length	300	300	300	300	300	250	300
	Seat binder	M.8 x 50							
Brakes		Shimano Altus C90							
Drivetrain	Crankset	Shimano Acera-X	24/34/42 w/ riveted rings						
		Length	170	170	175	175	175	170	175
	BB	Shimano BB-LP25	69/110						
	Pedals	Wellgo	Nylon ATB						
	F. derailleur	Shimano Acera-X	Down pull, 28.6 mm / 1 1/8"						
	R. derailleur	Shimano Alivio							
	Freewheel	Shimano HG50	11-28 7 speed						
	Chain	KMC HP70							
Wheelset	Hubs	Shimano Acera-X (r)	Compact HyperGlide cassette, 135 mm O.L.D.						
		Joy Tech (f)							
	Rims	Araya PX-35							
	Tires	Skinwall	700 x 35c						
	Tubes	Schraeder valve							
	Spokes	Chrome plated	36 front and rear						
		Front	304 15ga.						
		Rear- D/ND	302/303 15ga.						
Weight		25.3 lbs. (11.5 kg)							
Color		Wild Cherry or Black							

Geometry and Fit

	13	15	17	19	21	15.5W	18.5W
A. Head angle	70.0	70.5	70.5	71.5	71.5	70.5	71.5
B. Seat angle	74.0	74.0	73.0	73.0	73.0	74.0	73.0
C. Effective top tube	545	550	560	570	580	550	560
D. Chainstay length	430	430	430	430	430	430	430
E. Bottom bracket ht	281	281	281	281	281	281	281
F. Offset	40	40	40	40	40	40	40
G. Wheelbase	1027	1028	1029	1030	1041	1028	1030
Trail	83	80	80	73	73	80	73
Standover height	702	727	750	781	825	--	--
Reach	603	622	632	642	666	622	632
Head tube length	90	90	90	100	140	120	165

Three Steps to Selling a Zebrano

1) The Zebrano is a great commuting bike that's also fun for all round. Cro-Moly frame is light and strong. Upright, comfortable position allows good vision and visibility in traffic. SuperSoft saddle and high bar position adds comfort and stability.

2) Mountain bike styling with lighter, 700c wheels for speed and maneuverability.

3) Shimano derailleurs and GripShift offer easy shifting with hands-on control for stability and safety.

Alfresco

General Specs

Sizes			13	15	17	19	21	15.5W	18.5W
Frameset	Frame	Double-butted Cro-Moly	TIG welded						
	Fork	Cro-Moly	Forged dropouts						
	Headset	Tange Seiki SE-2	22.2/ 30.2/ 26.4, 29.9 mm stack height						
Controls	Handlebars	System 1	6061 T6 bulged aluminum, 25.4 mm stem clamp dia						
		Width	560	560	560	560	560	560	560
	Stem	System 1 Hybrid	Cro-Moly, TIG welded						
		Length	90	105	120	120	135	90	105
		Degrees rise	20	20	20	20	20	20	20
		Insertion	140	140	165	165	165	140	140
	Shifters	GripShift SRT-400							
	Brake levers	Dia-Compe PC-7	w/reach adjusters						
	Grips	Fisher Hex	Kraton						
Saddle		Fisher	Foam w/ 'Bio' design						
	Seatpost	System 1	6061 T6 aluminum, 27.2 mm diameter						
		Length	300	300	350	350	350	300	350
	Seat binder	System Steel	31.8 mm clamp w/quick release						
Brakes		Shimano Alivio							
Drivetrain	Crankset	Shimano STX	22/32/42 w/58/94 bolt hole circle						
		Length	170	170	175	175	175	170	175
	BB	Shimano BB-LP25	73/113						
	Pedals	System 1	Resin body w/alloy cage, sealed, w/clips and straps						
		Clip size	M	M	M	L	L	M	M
	F. derailleur	Shimano STX	Down pull, 31.8 mm / 1 1/4"						
	R. derailleur	Shimano STX							
	Freewheel	Shimano IG50	11-28 7 speed						
	Chain	Shimano IG50							
Wheelset	Hubs	Shimano Alivio	Compact HyperGlide cassette, 135 mm O.L.D.						
	Rims	Weinmann ZAC19							
	Tires	Avocet	700 x 35c						
	Tubes	Presta valve							
	Spokes	Stainless	32 front and rear						
		Front	296 14ga.						
		Rear- D/ND	295/295 14ga.						
Weight		25.5 lbs. (11.6 kg)							
Color		P.C. Green							

Geometry and Fit

	13	15	17	19	21	15.5W	18.5W
A. Head angle	70.0	70.5	70.5	71.5	71.5	70.5	71.5
B. Seat angle	74.0	74.0	73.0	73.0	73.0	74.0	73.0
C. Effective top tube	545	550	560	570	580	550	560
D. Chainstay length	430	430	430	430	430	430	430
E. Bottom bracket ht	281	281	281	281	281	281	281
F. Offset	40	40	40	40	40	40	40
G. Wheelbase	1027	1028	1029	1030	1041	1028	1030
Trail	83	80	80	73	73	80	73
Standover height	702	727	750	781	825	--	--
Reach	614	630	652	662	685	619	640
Head tube length	90	90	90	100	140	120	165

Three Steps to Selling an Alfresco

1) US built, Gary Fisher designed, double butted Cro-Moly hybrid is ideal for performance commuting or all-round riding. Excellent fit with a more upright position for stability, yet sporty handling.

2) STX with GripShift and the new IG system for shifting performance.

3) Avocet tires on Weinmann rims for light and responsive riding with low rolling resistance.

Upgrades from the Zebrano

US built, double butted full Cro-Moly frame is lighter, more lively, and top quality.
Shimano STX components are lighter and stronger with better performance.
New IG system provides 'shockless' and quiet shifting both up and down the gears.
Avocet tires are light and roll fast.
Alloy bars and Cro-Moly stem add strength and reduce weight.

Torque Specifications

Item	Torque Specifications LB•IN	KGF•CM
Handlebar clamp bolt, forged stem	150-180	170-200
Handlebar clamp bolt, welded stem	100-120	115-140
Stem wedge bolt	175-260	200-300
Direct connect steerer clamp bolt	100-120	115-140
Direct connect hidden steerer clamp bolt, steel	150-180	170-200
Direct connect hidden steerer clamp bolt, forged aluminum	172-215	200-250
Bar end attaching bolts	130-150	150-170
Seat attaching bolt	175-350	200-400
Seat post binder bolt	150-180	170-200
Water bottle attaching bolt	20-25	23-29
Crank arm bolt	300-390	350-450
Chainring bolt	50-70	60-80
Pedal attachment	350-380	400-440
KSS cartridge bottom bracket	160-175	184-204
Shimano cartridge fixed cup	403-600	463-690
Wheel axle nuts	130-210	150-250
Shimano cassette lockring	347	400
Front derailleur clamp bolt	40-60	50-70
Rear derailleur attaching bolt	70-85	80-100
Front and rear derailleur cable clamp bolt	35-52	40-60
Shifter clamp bolt, top mount style	40-60	50-70
Brake lever attaching bolt	40-60	50-70
Brake caliper attaching bolt	70-85	80-100
Cantilever brake attaching bolt	40-60	50-70
Caliper brake pad attaching bolt	40-60	50-70
Cantilever brake pad attaching nut	70-80	80-90
Brake cable clamping bolt	50-70	60-80
Cantilever cable carrier fixing bolt	35-45	40-50
Anti-Chain Suck Device	30-40	35-45
Rock Shox		
Brake arch-slider	60-70	68-80
Brake boss	100-115	115-132
Fork crown pinch bolts	55-65	63-75

Glossary of Terms

Advanced Light Action: Dual SIS shifting with reduced lever effort for easy, precise shifting.

Alignment: The placing of two or more objects in a line. In bicycles this usually refers to the wheels being not just in a line, but in the same plane, with the frame members oriented correctly within this plane. Good alignment is necessary to the function of most systems of the bike.

Aluminum: Low density metal with good structural characteristics, its properties can be changed by alloying. Aluminum alloys are usually noted by a 4 digit number which describes the alloy. Example: 6061 aluminum.

ANSI: American National Standards Institute. ANSI has developed a helmet testing standard which requires a drop test of 1.5 meter onto both a flat surface and a round anvil using a 13 pound head form. The helmet must register less than 300 Gs to pass.

Anodized: An electrolytic plating process which adds a surface treatment to aluminum.

Anti-Vibration M-System (AVM): Shimano cantilever arms and brake pads designed to counteract braking vibrations which cause squealing. Found on '95 Alivio, STX, and STX-RC brakes.

Butting: A process that changes the wall thickness of a tube under extreme pressure. If both ends of a tube are thicker than the middle, called double butting.

Bonding: A process which uses an adhesive to permanently join two objects without heat.

Carbon fiber: A long strand of carbon molecules, usually noted for light weight, stiffness, and high tensile strength.

Carbon fiber composite: A matrix of carbon fibers in epoxy resin which yields a new material with the benefits of both base materials.

Conservation of Energy: A law of physics that energy can be neither created nor destroyed. In bicycles, this is the principle behind suspension: you are managing impact energy by converting it to another form, but suspension should not convert a rider's pedaling force into anything other than forward motion.

Cro-Moly: A steel alloy with chromium and molybdenum added to provide higher tensile strength.

Damping: Increasing the time over which a suspension system absorbs an impact, managing energy transfer.

Dishing: The centering of a rim over the axle locknuts of the hub. On the rear wheel, this usually requires dissimilar spoke angles on the drive (freewheel) and non-drive sides of the hub, as the hub flanges are not located in the center of the axle.

Direct connect: A special stem which clamps directly to the outside of an unthreaded steerer of a fork.

Dual Control: Combination brake and shift levers allowing either function without moving your hands.

Dual SIS: The result of combining SIS and HyperGlide with HyperDrive for front and rear indexed shifting.

Durometer: The hardness of a material. In suspension terminology, the hardness of an elastomer spring directly relates to its stiffness, or spring rate.

Elastomer: A plastic compound with memory, so that it will deflect under pressure, but return to its original form as the pressure is released. Formed by long chains of molecules, the many different types of elastomers use different molecules and lengths of molecules to provide unique characteristics.

Epoxy: A two part adhesive developed for aerospace applications requiring high strength.

Extruding: A process where a material is pushed through a die, or specially shaped hole, which creates a long rod with the cross section described by the die. This process is used to make rims.

EPS: Expanded Poly Styrene. A lightweight and very shock absorbent foam used in helmet construction.

Evolution: A term referring to Gary Fisher's oversize steering system incorporating oversized head tube, steerer tube, headset (1 1/4"), and stem. Evolution provides extra strength and stiffness for better steering control.

Forging: A process where material between two dies (half forms of the item being made) is hammered together under pressure, and a rough form is made, usually requiring machining to make the finished product. Forging adds strength through work hardening.

Freehub: A Shimano design which incorporates a freewheel ratchet and bearing assembly into the rear hub. This allows moving the right hand wheel bearing race closer to the dropout, creating a stronger axle assembly. Freehubs also offer specific cog placement for accurate indexed shifting.

GripShift SRT: GripShift is a shifting mechanism which rotates on the handlebar to change gears. SRT stands for Size, Rotation, and Transition (between the shifter and the stationary grip), all three of which have been reduced to increase performance.

GripShift SRTi: GripShift with inboard cable routing, thus the 'i'

HyperDrive-C: Compact HyperDrive drivetrain with reduced size chainrings and cassette cogs.

HyperDrive (HD): Front indexing system featuring a left side STI SIS shift lever, front derailleur, low profile crank with SG-X chainrings, and cartridge bottom bracket.

HD-CX: Compact HyperDrive drivetrain for use on hybrids. The system consists of a 20/32/42 front SG-X crankset and a rear 11/19 HG cassette. This is found on the 400CX and 700CX groups only.

HyperGlide: Special freewheel tooth profiles found on Shimano freewheels to enhance shifting speed, smoothness, and accuracy.

IG (Interactive Glide): Shimano term referring to special tooth profile on the cassette cogs and SGX-II chainrings, along with a new chain configuration and rear derailleur, which allow shifting smoothly to smaller cogs under power as well as larger, without jamming.

Investment Casting: A process which allows casting of intricate shapes. A wax plug (replica of the final piece) is dipped into a ceramic slurry which creates a hard coating over the wax. Applying heat removes the wax without effecting the ceramic crust. Molten metal is then poured into the hollow ceramic shell. After the metal has cooled, the crust is broken off to reveal an exact replica of the wax plug. Also called "Lost Wax Process".

Laser: Light Amplification by Stimulated Emission of Radiation.

Manganese: A strong alloy of steel.

Miter: To shape or cut one piece to follow the shape of another piece it will be joined to. In bicycles, this involves cutting the end of a tube so that it follows the curve of the tube its being joined to.

M-System: Short for Multi-Condition Braking System, this Shimano system includes low friction cables and housing, modified brake lever geometry, and a special brake pad compound. Although all brakes are effected by moisture, M-System brakes work extremely well even when wet.

Modulus: The stiffness of a material, as measured in deflection of a given cross section under a set force.

OptiGear: Visual indicators on Shimano shifters.

OS (OverSize): Usually referring to a fork or headset system requiring a 1 1/8 inch steerer outer diameter. Also used to refer to oversize tube sets.

OX-3: Oversize tubeset of True temper Cro-Moly which has been heat treated for higher strength.

Parallax: Shimano hubset with large diameter center section. Also available with suspension axle with oversize (10 mm) center section.

Preload: Suspension term describing the stiffness of a spring when there is no weight on the bike. If the preload is less than the stationary force of the rider, sitting on the bike will cause the suspension to compress.

SGX: Shimano chainrings with special, computer designed tooth profiles with side pick-up teeth for smoother shifting from smaller to large chainrings.

SGX-II: Further design of the SGX chainrings which offers special release profiles for smoother, "shockless" shifting. An important component of the the IG system.

Sag: The amount a suspension system compresses under a rider's weight.

Signature Sequential TIG welding: A method of TIG welding used on Gary Fisher U.S. built Cro-Moly bikes which uses the normal warping of the welding process to neutralize a frame's alignment. By welding only a portion of each joint, Argon can be flowed over the entire "hot" portion of the weld which prevents weakening of the steel by oxygen embrittlement.

Snell: Testing standard for bicycle helmets requiring less than 300 Gs to register when a helmet with a headform goes through a 2 meter drop onto a flat surface, and a 1.2 meter drop onto a round anvil.

Specific Modulus: The modulus of a material divided by its density. In layman's terms, this is stiffness per weight.

Specific Ultimate Strength: The ultimate strength of a material divided by its density. In layman's terms, its breaking strength per weight.

Spring: The primary device that resists impact in a suspension system, also the device that makes the suspension rebound.

Spring rate: The measured stiffness of a spring. As a spring is compressed, its stiffness changes. The springs in different systems change at different rates as they are compressed, and "spring rate" is also used to describe this change in stiffness.

Sprung Weight: The weight of everything above the springs of a suspension system.

Steel: A metal consisting of an alloy of iron and carbon. Different types of steel are produced by adding specific amounts of alloying agents (see Cro-Moly).

Stiction: Abbreviation of "Static Friction", or the frictional force resisting movement of a system at rest.

Suspension: A system of energy management that is designed to reduce, change, or absorb the forces acting on a body.

T6: A term referring to solution heat treating and aging of aluminum.

Tensile steel (also Hi-Tensile Steel): A steel alloy with high carbon count. This alloy is almost as stiff as Cro-Moly, but requires more material to achieve the same structural strength, making a tensile steel bike slightly heavier.