1997 Technical Information

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NOTES:

FOR MORE INFORMATION...
OR OTHER TECHNICAL QUESTIONS NOT COVERED HERE, PLEASE CONTACT:

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Kona Mountain Bikes

is headquartered in Ferndale, Washington and Vancouver, BC. The Pacific Northwest provides us with climate and terrain that is very brutal on equipment. Our core Design Group is aided and abetted by a serious group of employees who make a habit of riding off-road every day in every type of rideable (and nearly rideable) condition.

FRAME DESIGN

We are constantly evaluating and adjusting our frame designs as rider demands and technology changes. Rather than re-inventing the mountain bike every season based on the latest trend, Kona chooses to fine tune our proven designs. While the sloping top tube layout which we pioneered over 8 years ago is no longer unique to our frames, the subtle refinements are. When advances in technology and manufacturing allowed us to produce full suspension frames, Kona incorporated all the benefits and enhancements of our sloping top tube design.

• 625 grams in the steel bead version.

SNIFF - Front Tire

• Sniff is a Mr. Dirt modified for hardpack conditions.
• A 26x2.10 high performance casing with directional knobs for consistent hardpack handling.
• Available with natural rubber tread and 120 tpi casing.
• 625 grams with steel bead.

SCRATCH - Rear Tire

• As a partner with Sniff, the Scratch provides stable climbing, braking and cornering in hardpack conditions.
• Side knobs are evenly spaced and heavy supported for predictable cornering.
• Available with natural rubber tread and 120 tpi casing.
• 575 grams with steel bead.

MR. DIRT, THE CLEANER, SCRATCH & SNIFF ARE DIRECTIONAL TIRES. THEY MUST BE MOUNTED ACCORDING TO THE DIRECTIONAL ARROWS.

For service, safety & maintenance information, please refer to the Kona Owner's Manual, which is provided with each bicycle.

The technical specifications contained in this document have been taken from sales literature produced by Easton, Columbus, Reynolds, and Anaheim Extrusions. All titanium references are from "Ti-3Al-2.5V Seamless Tubing Engineering Guide" published by Sandvik Special Metals.

The new MOOSEKNUCKLE grip is 110mm long with circular knobs for a cushioned ride.
• The grip length is well suited for Gripshift.
• High grade Krayton rubber.
• Heavy duty end plugs wonít push into handlebar.
• 75 grams per pair.

RACE LIGHT & O-BEAM SEAT POSTS

• With the exception of 14″ and 16″ frame sizes, all Kona's use 375mm seat posts. The post length provides a greater seat post \ seat tube overlapped. The side benefit is that it slightly expands the range of rider fit per frame size.
• The O-Beam top is forged for strength and the twin bolt design allows for an easy, secure seat angle adjustment.
• The O-Beam weighs 250 grams.

MR. DIRT - Front Tire

• Mr. Dirt is a 26 x 2.06 front design tire. The large 7-9mm high knobs are heavy reinforced to provide solid traction and cornering in adverse conditions.
• Mr. Dirt is designed for soft and muddy conditions.
• 675 grams in the steel bead version.

THE CLEANER - Rear Tire

• The Cleaner is structurally similar to Mr. Dirt. It uses the same 26 x 2.06 tire casing and the same well supported side knobs.
• The Cleaner's paddle-style center knobs are directionally shaped and angled. The driving face of the knob is perpendicular to the casing for excellent bite. The trailing face is angled to release any mud build up.

LONG OVERSIZE HEADTUBES

• Provide a stronger support for top tube and down tube.
• Help distribute shock and prolong headset bearing life.
• Provide a better seat-to-bar relationship when using flat stems.
• Adjusted to accommodate 2″+ travel suspension forks.

LONG, SLOPING TOP TUBES

• Provide room in the rider compartment for body movement and proper positioning.
• Allow for more stand-over clearance.
• Make for a vertically more compliant "hard tail" frame by bringing the top tube and down tube close to parallel.
• Allow for more stand-over clearance, (critical on full suspension frames due to slightly higher bottom brackets).

EXTENDED SEAT TUBES

• 3″ of seat tube extend above the top tube to provide the rider with ability to raise the seat to a height proportional with the handle bars.
• External butting provides additional material to properly support extended seat posts.
• 14″ frames are equipped with a rear brake cable guide that provides a "hard" cable routing to the rear brake and allow correct cross-over cable clearance. There are no welds to distort the frame and there is no cable housing to compress and soften brake feel.
• Kona seat clamps provide worry free locking power. Besides being easily replaceable if over torqued, there are no welds to distort the seat tube.

COMPACT REAR TRIANGLE

• 16.75" chain stays provide the perfect balance of stability and power transfer when out of the saddle.
• Lower attachment of the seat stays (due in part to the sloping top tube) produced shorter tubes that have less flex during braking and acceleration.

CABLE ROUTING

• For 1997, all Kona frames have top route front derailleurs.
• All Kona frames (except for full suspension) have bottom route rear derailleurs.
• This combination has the least amount of cable friction and provides the best shifting performance.

FULL SUSPENSION

VERSION ONE - U'I & MANOMANO NEW FOR 1997

• The frame design used on these two models is a rising rate system built around a coil-over shock with a leverage ratio of 2.06:1, the rear wheel has 3" of travel.
• The chainstay pivot is located above the axle horizontal to eliminate suspension bobbing due to pedalling. This location also keeps the drivetrain length very consistent.
• Custom valved Shock Works (U'I) and Fox Vanilla (Manomano) coil-over rear shocks.
16" = 450 lb. spring
18", 19", 20" = 550 lb. spring

shape does not interfere with the cam action of any quick release skewers.
• New Kona brake cable attachment.
• Steer tube = 1-1/8". Offset = 1.6"
• Extremely light OS fork; 775 grams

MUDSHARK ROAD FORK

• Investment cast crown and dropouts.
• 24mm Oval straight blades.
• Triple butted chromoly tubing.
• Steer tube = 1". Offset = 45mm
• 580 grams

OTHER KONA COMPONENTS

KONA 180 HANDLEBAR

• 6061 aluminum handle bar.
• The non-bulged design leaves the bar a constant diameter, allowing it to flex along its entire length.
• The new one piece shim protects the clamp area of the handle bar from stress risers that can occur by over tightening the pinch bolts or crashing the bike.
• 180 grams

KONA GRIPS

The HOT DOG grip is 120mm long with two cut lines incorporated into the design. These lines allow the rider to customize the grips for use with all GripShift model and bar-end combinations.
• One cut section is 15mm wide and the other is 25mm.
• The grip shape and thickness make it perfect for use with all shift systems, including Rapidfire.
• High grade Krayton rubber.
• Heavy duty Hot Dog end plug won't push into handle bar.
• 75 grams per pair.

KAPU

• Constructed entirely of Columbus Nivacrom OR tubing.
• Genius tubing is directionally butted. Top - .7/.4/.7, Down - .8/.5/.8
• Seat tube is custom drawn for Kona by Columbus with wall thickness of 1.3/.6/.9
• Designed for 27.0mm seat post, 68mm bottom bracket lug width and 1" headset.
• Made with Italian tubing.
• 3.1 lbs for an 56cm frame.

KONA FORKS

Kona has always used the Project Two fork design. Like everything else, this simple design has undergone many refinements over the years. From the start, the primary goal of the P2 is handling. The stout, unraked unicrown design has excellent torsional rigidity. Because of this, precise steering is guaranteed even under the harshest conditions.

PROJECT TWO SPORT FORK

• Full chromoly construction.
• New Kona brake cable attachment.
• Steer tube = 1-1/8". Offset = 1.74"

PROJECT TWO TRIPLE BUTTED FORK

• High quality triple butted blades with internal wall thickness decreasing from top down (1.3/0.8/0.5mm).
• By having the thinnest tubing in an unraked area at the bottom of the blade, the fork provides shock absorption at the wheel and stiffness at the crown.
• New forged dropout provides a strong wheel attachment. This dropout is a "plug" type that has a very large contact area with the fork legs. The re-designed

VERSION TOO - U'HU & KING KIKAPU INTRODUCED IN 1996

• Unified, linear rate rear triangle with a shock leverage ratio of 2.45:1 produces over 3.5" of travel, while the chainstay length remains constant.
• The main pivot is located close to the bottom bracket shell to provide a stable drivetrain structure that minimizes any side-to-side movement of the rear wheel.
• This close positioning of the pivot to the bottom bracket shell, allows the effective seat height to change by only 8mm, while the rear wheel moves 90mm at full compresion.
• Wrap-around seat stays connect to cold-forged swingarms.
• The suspension remains active in or out of the saddle and is unaffected by braking.
• Custom valved Fox Alps-5 (U'hu) and Alps-5R (King Kikapu) shocks with internal negative spring to eliminate stiction.

FRAME MATERIALS

TITANIUM

• Titanium tubing is widely viewed as the ultimate frame material. But just as all aluminum and steel are not the same, the quality and properties of titanium can vary greatly with each tube fabricator.

• If you look on a Periodic Table of Elements, you will find Ti below Al., indicating that Aluminum is lighter than Titanium. However, Titanium has superior mechanical qualities over Aluminum.

TITANIUM (CONT'D)

• In addition to having an excellent strength to weight ratio, Titanium has a structure which is resistant to fatigue and corrosion. Due to these strengths, less material is used to produce a strong, reliable frame.

• The simplest and cheapest titanium tubing is known as CP, or commercially pure titanium. This is just what it sounds like; a simple element drawn into the shape of a tube. The typical CP frame is extremely flexible. And even though titanium can resist many more stress cycles than aluminum or steel, this excessive flex will quickly lead to a work hardened stress crack. Yes, even titanium can fail.

• To improve the ride characteristics of a CP frame, some manufacturers introduce oxygen into the fabrication process. The oxygen embrittles the titanium and provides a degree of stiffness to the frame. The downside is that this process also shortens the fatigue life of the frame.

• The best way to improve the property of Titanium is to mix in Aluminum and Vanadium. By adding 3% aluminum and 2.5% vanadium, you get 3-2.5 Titanium alloy.

• This next point is important; All 3-2.5 titanium alloy tubing is not the same. How the tubing is produced greatly effects its strength and ride properties. Depending on the method used to draw the seamless tube, minimum yield strength can range from 75,000psi to

• The seat tube is custom drawn for Kona by Columbus with a wall thickness of 1.3/.6/.9
• Columbus drawn, oversized seat stays dramatically improve braking performance.
• Made for 27.0mm seat post, 28.6mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
• Made with Italian tubing.
• 4.0 lbs for an 18" frame.

KILAUEA

• Constructed entirely of Columbus Cyber MTB tubing.
• Tubing wall thickness: Top - .7/.4/.7, Down - .8/.5/.8
• The seat tube is custom drawn for Kona by Columbus with a wall thickness of 1.3/.6/.9
• Made for 27.0mm seat post, 28.6mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
• Columbus drawn, oversized seat stays dramatically improve braking performance.
• Made with Italian tubing.
• 3.9 lbs for an 18" frame.

CINDER CONE & LAVA DOME

• Constructed with chromoly double-butted tubing.
• The top tube and down tube are butted .9/.6/.8 and the seat tube is 1.0/.7 with an external seat tube reinforcement.
• Made for 27.0mm seat post, 28.6mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
• 4.5 lbs for an 18" frame.

HOT

- Constructed entirely of Reynolds 853 tubing, made in England.
- The top tube has an O.D. of 28.6 and is double butted .7/.5/.7
- The down tube on 14"-18" frames have an O.D. of 31.7 with a .7/.5/.7 wall thickness. The 19"-20" frames have a downtube with a 34.9 O.D. and a wall thickness of .8/.5/.8
- The seat tube is drawn specifically for Kona with an external reinforcement in the seat tube extension area, wall thickness 1.3/.6/.9
- The seat stays are double tapered 18mm tubes and the chain stays are ovalized with a taper ranging from 27.5 to 17.0.
- Made for 27.0mm seat post, 28.6mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- Made in the USA by Altitude Cycle.
- 3.6 lbs for an 18" frame.

CALDERA

- Constructed entirely of Altitude Cromoly Heat-treated tubing.
- The top tube is butted .8/.5/.8, the down tube .9/.6/.9 and the seat tube is 1.5/.9 with an external seat tube reinforcement.
- Made for 27.0mm seat post, 28.6mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- Made in USA by Altitude.
- 4.0 lbs for an 18" frame.

EXPLOSIF

- Constructed entirely of Columbus Nivacrom Max OR tubing.
- Tubing wall thickness: Top - .7/.4/.7, Down - .8/.5/.8

105,000psi. Additionally, by cold working the tube, the grain can be altered to better meet specific load requirements. Sandvik is one of the largest and most experienced fabricators of titanium tubing. They control the production from the raw ore to the finished tube, and make all their titanium tubing to aerospace standards.

- Kona has been designing and selling Sandvik made 3-2.5 Titanium alloy frames for 7 years. Through our extensive experience and Sandvik's massive capacities, we have produced one of the finest titanium mountain bikes in the world. What makes it so good is the highly evolved design that has been refined every production run. It has the ride quality and longevity that justify the price.

KING KAHUNA

- Sandvik custom drawn and directionally shaped seamless 3-2.5 titanium main frame with reinforcing gussets. Sandvik custom drawn and tapered seamless 3-2.5 titanium chain stays and seat stays.
- Water cut 6-4 titanium plate dropouts fabricated with Kona-designed "Bullet" plug for superior strength and alignment.
- 6-4 titanium threaded bottom bracket shell.
- Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- Made entirely in the USA by Sandvik
- 3.3 lbs for an 18" frame.

HEI HEI

• Sandvik custom drawn 3-2.5 seamless titanium tubing.
• Water cut 6-4 titanium plate dropouts fabricated with 'Bullet' plug for superior strength & alignment.
• Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
• Made entirely in the USA.
• 3.3 lbs for an 18" frame.

ALUMINUM

• Aluminum is light and fairly resistant to corrosion. These properties are what makes aluminum desirable. But aluminum is also weak and has a finite fatigue life. The easiest way to make aluminum applicable for frame use is to increase the tubing diameter. The larger size tube provides the necessary stiffness while the reduced wall thickness keeps the weight down.

• Like titanium, aluminum is best when other materials are added to form an alloy. "The aluminum - magnesium - silicon 'system' is one of the most important in aluminum alloy metallurgy. The dissolving and precipitating of the compound magnesium silicide in the aluminum forms the basis of the 6000 series of aluminum alloys. Other elements such as copper, zinc and chromium are added to enhance the basic properties of the alloy." The higher percentage of silicon, magnesium and chromium differentiate 6061 from the weaker 6000 series alloys.

• The increased percentage of zinc helps make 7000 series aluminum the strongest of the aluminum alloys. With the

in steel tubing technology than in all the 90 years before. Kona utilizes two of the most impressive advancements.

• The Columbus Nivacrom tubing used in the Kilauea, Explosif and Kapu are examples of an exceptionally strong, non-heat treated steel. Because of its peculiar chemistry, Nivacrom is resistant to overheating during brazing and welding. "Some alloying elements in it, such as Vanadium and Niobium, precipitate into the metal matrix, thus preventing grain enlargement and the degradation of mechanical properties even at temperatures exceeding 1000°C." What does all that mean to you? It means that some guy can get a little too happy on the TIG welder and not ruin your expensive frame. The other benefit of Nivacrom's structure is strength. With a Yield Strength of 1030 N/mm2 , or @150,000psi, this Columbus tubing exceeds the numbers of 6-4 Titanium tubing without the cost and building difficulties.

• A steel with even more impressive numbers is the new 853 tubing from Reynolds. This material is a high strength, heat treated, air hardening steel. The main advantage of 853 is its ability to air harden after jointing. "When building frames (with 853) using either TIG welding, or high temperature brazing above 850°C (1560°F), the joints increase in strength as the frames cools to room temperature." This is exactly the opposite of what occurs in most frames. The additional benefits gained by the composition of 853 include stiffer, more efficient frames and resistance to denting.

STEEL

• While the term "steel frame" can cover anything from the stamped high tensile rig sold at Toys-R-Us, to the custom chromoly handbuilt, we'll limit this to just the quality end of the range. In general, steel is appealing because it's durable, easy to work with, repairable and fairly inexpensive.

• The basic components of 4130 Chromoly steel are Chromium, Molybdenum, Manganese and Carbon along with traces of a few other elements. The ratio of these elements combined with extrusion techniques is what makes a Columbus or Reynolds steel tube different from each other. If made properly, a 4130 CroMo frame can last a lifetime. Unless a steel frame of this quality is pushed beyond its maximum yield, it should not fail. Of special note, the Yield strength of "standard" CroMo is @760N\mm2 compared to a quality cold worked 3-2.5 Titanium's number of 792N\mm2. Steel is durable. Steel can also be comfortable and efficient. The reason that companies make springs out of steel is because the material can retain energy and expend it back. A steel frame doesn't absorb the force of a pedal stroke or the impact of a water bar, it stores it. The gathering of force is what makes a frame comfortable and it is the return of that energy that gives a steel frame it's lively feel.

COLUMBUS NIVACROM & REYNOLDS 853 TUBING

• During the last fifteen years, bicycle manufacturers have made more advances

increase in strength comes an increased difficulty in fabrication. The higher alloy contents makes the material harder to manipulate and weld.

• Because Aluminum has a finite fatigue life, the more you work it, the quicker it will fail. Knowing this, one of the main goals of a tubing fabricator is to develop processes to extend an aluminum tube's life while keeping the weight to a minimum. If you use a plain gauge tube that is thick enough for a strong weld area, the overall weight of the tube tends to be excessive. By butting the ends of the tube, a frame maker can have plenty of material at the weld zones and still produce a light frame. The typical transition zone between thick and thin material tends to be rather short. Because of this, stresses put on the frame tend to remain at the weld zones. The faster the stress is applied, the shorter the frame life. By equipping aluminum Konas with suspension forks, damaging vibrations and impacts can be absorbed before they get to the head tube.

• Easton tubing is not butted, it is tapered. Through a special technique, "Easton's cold-work process achieves an extreme differential between thick and thin wall tube sections - with a remarkably smooth transition." The large reduction in tubing material makes the frames light and responsive. The other major benefit of the tapering is that it helps distribute stress down the tubes length and not leave it concentrated at the weld zone. The result is a frame that is as light as titanium and rides like fine steel.

KING KIKAPU & U'HU

- Easton Elite tubing.
- Tubing wall thickness: Top - 1.3/.9/1.3mm, Down - 2.2/1.0/1.5, Seat - 2.54
- Cold-forged, one piece aluminum dropout for high strength and excellent derailleur function.
- Cold forged aluminum swingarms for torsional rigidity.
- Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- Made with US-made tubing.
- 5.5 lbs. for an 18" frame.

MANOMANO & U'I

- Custom drawn 7005 seamless Aluminum alloy tubing.
- Tubing wall thickness: Top - 1.5/.9/1.3mm, Down - 2.2/1.0/1.5, Seat - 2.5
- Cold-forged, one piece aluminum dropout for high strength and excellent derailleur function.
- Cold forged aluminum swingarms for torsional rigidity.
- Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- 5.9 lbs. for an 18" frame.

KU

- Constructed entirely of Easton Elite tubing (including the stays).
- The tubing wall thickness is as follows: Top - 1.3/.9/1.3, Down - 2.2/1.0/1.5, Seat - 2.4/1.0/1.7
- Cold forged, one piece aluminum dropout for high strength and excellent derailleur response.
- Made for 27.2mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- Made entirely in the USA by Altitude Cycles.
- 3.4 lbs for an 18" frame.

KULA & AA

- Constructed of Easton Elite tubing.
- The tubing wall thickness is as follows: Top - 1.3/.9/1.3, Down - 2.2/1.0/1.5, Seat - 2.4/1.0/1.7
- Cold forged, one piece aluminum dropout for high strength and excellent derailleur function.
- Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, and 1-1/8" headset.
- Made with US tubing.
- 3.4 lbs for an 18" frame.

MUNI-MULA & KOA

- Constructed of custom butted 7005 aluminum tubing.
- Cold forged, one piece aluminum dropout for high strength and excellent derailleur response.
- Made for 27.0mm seat post, 31.8mm front derailleur, 68mm bottom bracket, & 1-1/8" headset.
- 3.9 lbs for an 18" frame.