

COLUMBINE CYCLE WORKS

MAKING
EXTRAORDINARY
CUSTOM BICYCLE FRAMES



C • The slim *columbine* is an ancient flower. The medieval French considered it the flower of loyalty and constancy — qualities also given to the unicorn. Long ago the columbine was used in magic spells and as a remedy against poison.

Columbine started out as many small businesses do. An idea became a hobby, the hobby became an obsession, then a way of life. Rich and John Murphy founded Columbine with the goal of producing one of the finest frames possible. Their frames would be durable, and handle superbly.

For this ideal, the rugged high mountain Colorado state wildflower, the Columbine was chosen as their primary trademark. The "dove" flower symbolic of balance and constancy.

Distinctive among high alpine flowers, the Columbine's color, stature, and unique beauty are stunning to behold.

Columbine frames stand out as a statement of individuality, of personal expression, and a passionate pursuit of the craft.





In the Beginning...

Having some experience with bicycle and tool shops, and airplanes, the Columbine brothers felt sure that their devotion would get this new creation off the ground.

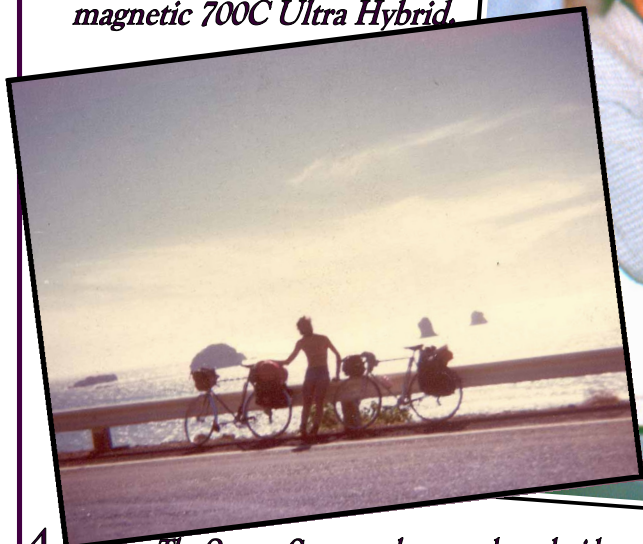


- Fast Company -

** Columbine's Own Racing team in Boulder, the Rocky Mountain Cyclists. Peter Thron Captain on Right, Tim Drager Left.*

You can get a lot of experience fast with a team like this. We learned like sponges from the experience, it all appears in frames built today. Durability is a must to keep a team rolling

Years later, Columbine flies to Japan for a prestigious place in the 2001 Tokyo Show with a magnetic 700C Ultra Hybrid.





Thanks for your interest and inquiry!

This printed matter cannot cover all the possibilities in the word custom, so if you don't see something that you have always had in mind, please ask. If not a structural or other liability, I can usually entertain it.

Over the years, magazines have picked up on the fancy Columbines, as they are memorable. Some people may even believe that is the only type made here, but the most basic frames are full of exceptional features. The ride quality, cornering/hill climbing efficiency, lightweight and durability are shared by all the frames and set a benchmark that is hard to match for value and features.

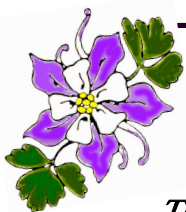
Calls to the shop find a lot of competition with loud machinery that can't be dropped immediately. So if you get the answering machine, please don't take it personally, leave a message and I'll call back,, or Email questions to : **john@columbinecycle.com**

Waiting time is variable, three to six months (simplest custom) to 9 mo. for Ultra frames. A timing promise is difficult, but I do make them if you can give a good date with a week or two of padding before the event or trip that you need the bike for. My waiting times are less than many other builders because I don't have to pack and ship the frames to others and get on their waiting list for painting/plating processes, it is all done in house.

Using the True Temper (USA) "Platinum" series of tubing, I've been pleasantly surprised with the metal distribution, straightness, and hardness (correlates directly with tensile strength), very nearly as hard as the tools that I have to whittle it with. So for now, I'll be using Platinum tubing along with the best NiVa Chrome Series from Columbus (Italy), and of course the Prestige Road fork blades until they run out. Sometimes, the frames are 100% USA made!

Also, there are a few new kids on the block these days. That being the new Reynolds 953 Stainless, and the new Stainless from Columbus, and a Stainless made in the USA called KVA. This is the tubing that I have waited many years for, as I think they can build a nearly indestructible bicycle frame. The possibilities are limitless. The material is expensive, but well worth it. Call for updates on these, as things change fast. I have big plans for these steels, and I have been gearing up making new equipment for working them in new ways. Please watch the website, as I'll be taking one of these ultralights through the processes and posting photos of progress in the upcoming months.

Regards n Tailwinds,
John Murphy



— The Materials —

The finest investment castings, forgings, machined parts, stampings and multi-heat treated tubing start the process.

Each tube is profiled for precise length of butted and unbutted sections, and the the plane and dimensions of natural bend in the tubes are mapped so that each tube will spring with measured predictable behavior. These ingredients ensure that matchless sonorous ride of superlight steel.



** Photo left shows the progression of machining steps to arrive at the seat stay top clamp pieces. The miter angle is unique to each frame because of the vast number of possibilities with custom chain-stay lengths, bottom bracket heights, and seat tube angle.*

Columbine frames are built with multi-heat treated Chrome-Molybdenum Steel tubing with Niobium(Ni) and Vanadium(Va), Columbus calls theirs NivaChrome), important alloying agents for grain refinement. For the first time, Columbine will be using a mixture of brand names of tubing most of the time. Each manufacturer is producing sets with what I consider to be inconsistencies of gauging or material strength, anomalies that can produce strange material distribution in the finished frame. I never mix tubing because of price, only the best from each manufacturer: Prestige, True Temper, Columbus, and the new Reynolds 953 Stainless.

Metal distribution is at least as important as material strength. More gauges and butting options will give better distribution for optimum behavior, strength and longevity. Also, straightness is critical, so shopping for that is of primary importance. The idea is to put the metal only where necessary to enhance the hill climbing, handling, stability, and comfort properties and match those to the purpose of the frame. Tubes are always double butted and taper gauged.

Typical Road Racing frames weigh 3.05-3.3 lbs. for an honest Classic geometry 56 cm. frame suited for up to 180 lb. riders, with the fork weighing in at 1.2 lb. (lighter for compact style), add about .1 to .25 lb. for Hybrid/Cyclocross/Touring frames, .25 to .5 lb. for Mountain Frames.

Columbine frames suffer no vague handling and descending irregularities that plague many other ultralights. These modern Steels are really Super metals that if newly discovered today instead of resulting from years of diligent development would be termed miracle metals by experts! Maybe you've noticed, Titanium frames typically weigh up to four ounces more than a Columbine. If you seek to build a light record type frame, please ask because there are building techniques that take longer but remove dead weight to yield lighter frames.



A Closer Look

Columbine personalized high performance bicycles begin as form follows function. Desired functions are balanced with geometry factors to achieve the design features.

The "have your cake and eat it" approach.

Double duty cable guides reinforce the eccentrically machined bottom bracket shell and relieve enough dead metal to add a gauge on the downtube...

...or just make the frame that much lighter

Elegantly simple "fastback" seatstay juncture creates the strongest seat clamp too

Design

Ultra high strength Stainless Steel vertical dropouts are sculpted for lightweight and ease of wheel entry.

Comfort, responsiveness, stability and lightweight are all the result of solid design, precise assembly and the finest materials.

"Ultra" Filligreed Lugwork

Inset photos right show one type of relief carved head lugs incrementally between basic Custom cutting and the Ultra..

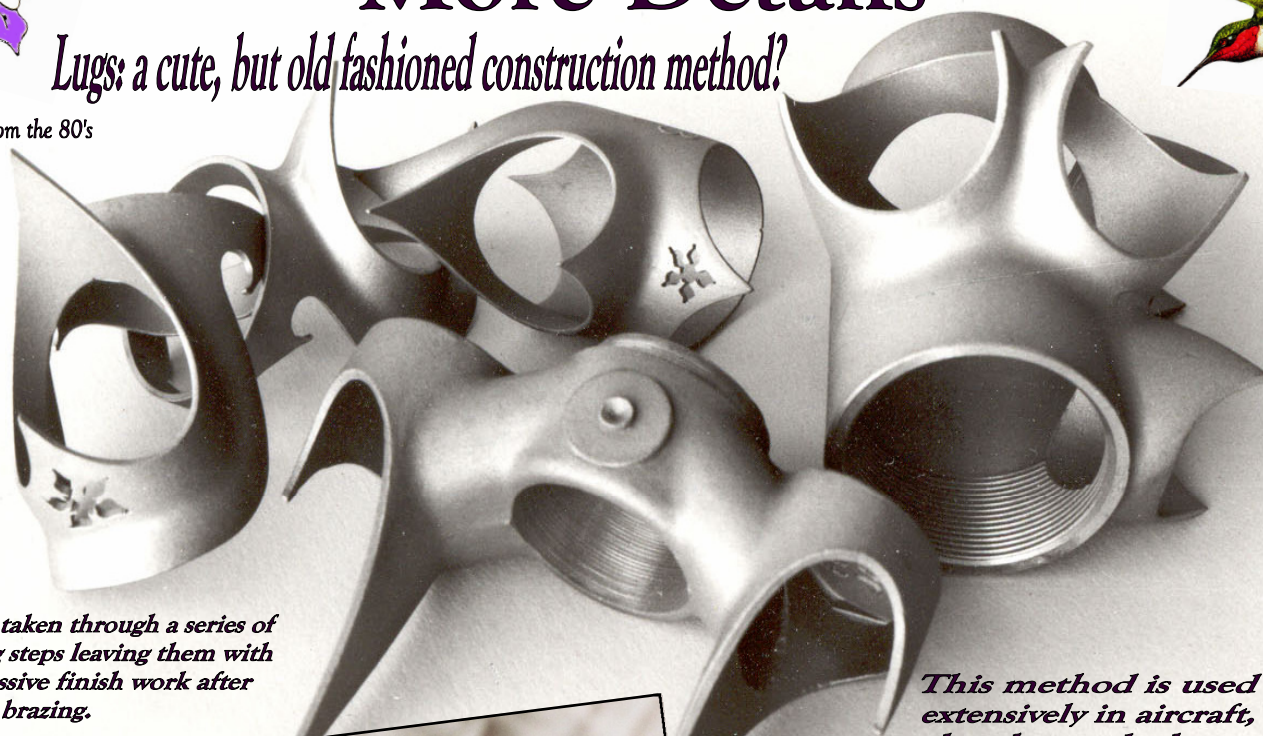


— More Details —



Lugs: a cute, but old fashioned construction method?

Lug Set from the 80's



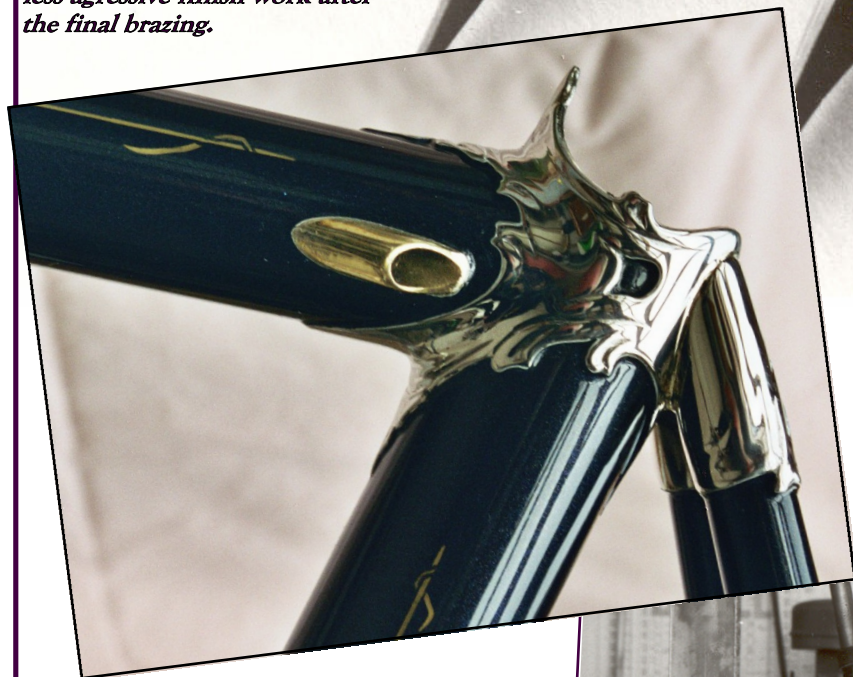
Lugs are taken through a series of finishing steps leaving them with less aggressive finish work after the final brazing.

This method is used quite extensively in aircraft, space shuttles, and wherever the maximum integrity of the metals has to be preserved

Still High Tech!

It all started with Henry James Bicycles investment cast lugs and crown. Hank gave us an exclusive for a while on the Stainless parts which got us off in a direction that made all the difference

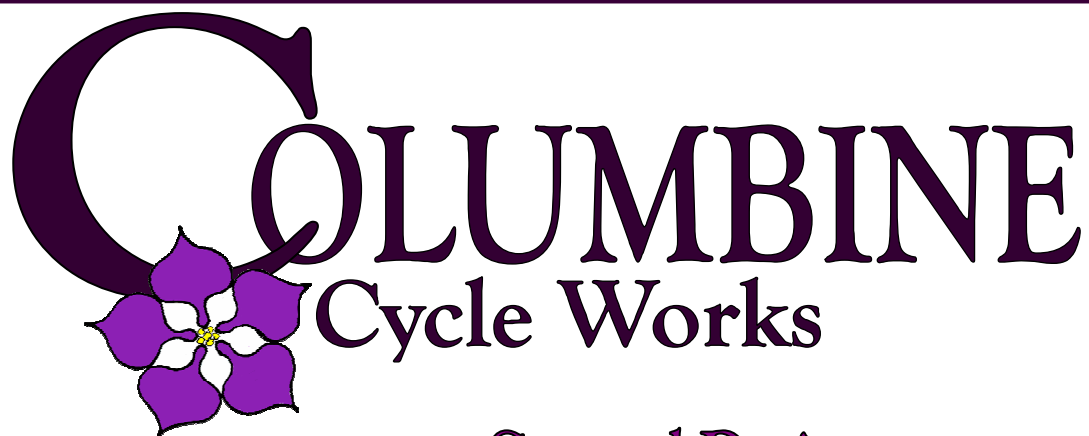
Much of the ticklish work is finished by the time a frame is brazed all at one time.



Superlight Prestige tubing enabled us to build frames in the eighties that are still competitive with the frame weights expected for superlights today. With light weight comes the comfort of valuable spring movement.

Low temperature Silver brazing makes joining all of the dissimilar metals possible at high strength. It wouldn't be a stretch to think of it as soaking in a high temperature glue.





General Design Specifications and Philosophies

THE NATURE OF CUSTOM

Since all Columbine frames are 100% custom, we would ask that you suspend any previously limiting conventions that you may have held concerning bicycle frames and cycle fit. While we would like to say that the sky is the limit in these areas, there are limits to the degree to which we can go in design and fit. If we believe that a design request may be dangerous or embarrassing, we may ask that you rethink those parameters.

The finish of a Columbine also is seen on a continuum from the most basic carbon steel lugwork to the fanciest. For the sake of simplicity, starting points have been chosen by the monikers; Custom and Ultra mostly for the purpose of outlining pricing schedules for the additional artwork options. You can add any art to the basic frames.

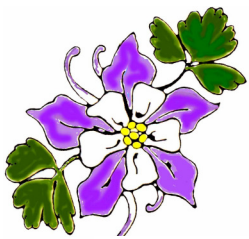
APPROACHING GEOMETRY

Frame geometry from extreme Road Racing through Hybrid/Cyclocross to extreme Mountain is seen as existing along a **variable continuum**. While factory produced frames must be nailed down to narrow specifications so that they lend themselves more readily to mass production, Columbine Frames do not need that type of conformity.

A frequently requested example of this idea is that of a Road Racing frame that can have touring capabilities. Such a frame is approached in a measured step by step deviation from the extreme. For instance, you would be questioned about the maximum tire to be used, and if the bike would ever use fenders, or do you mind responsive steering angles, or will the bike still be used for competitive racing, criteriums, etc.?

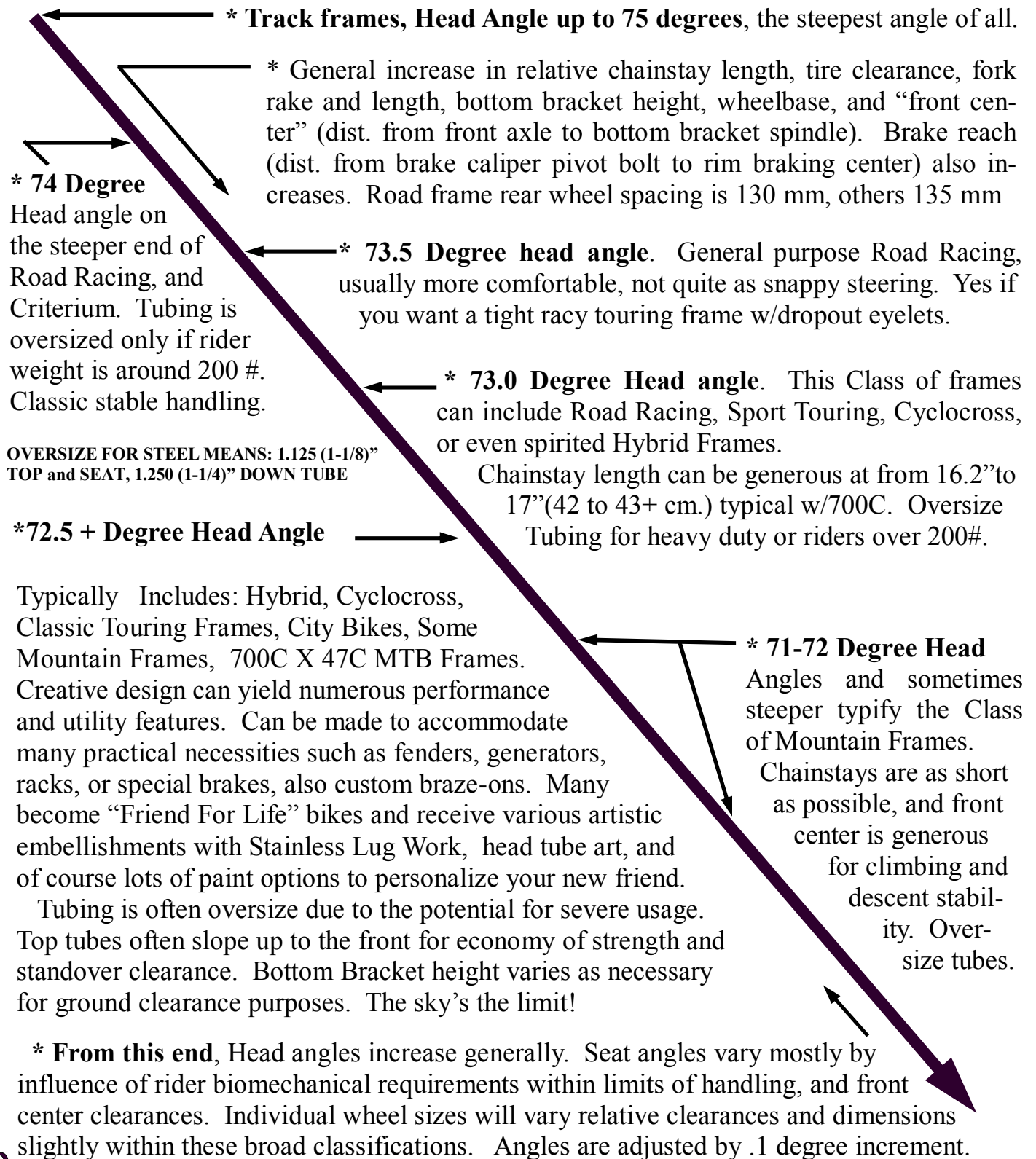
From this inquiry, the design might deviate from the racing extreme with changes like; adding dropout eyelets, 8 mm more chainstay length, + .2 mm chainstay gauge, 5 mm more bottom bracket drop, a 73.6 degree head angle instead of 74, and maybe 47 mm brake reach instead of 41 mm.

This is one example of the way that we arrive at the many variations involving almost every angle, tube length and gauge of tube on every frame to get for you the most features in performance with the least compromise. If you approach your wheels and other components with the same scrutiny, you will have a truly classy well balanced high performance bicycle.



The Columbine Custom Continuum

This guideline is meant to give typical points on the continuum to start designing from.

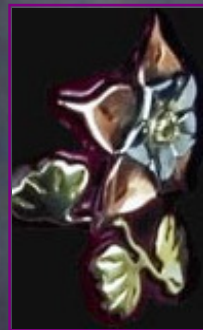


Columbine Custom Lugwork

*Light Hybrid frame with one
example of Custom Lugwork
done in optional Stainless Steel*



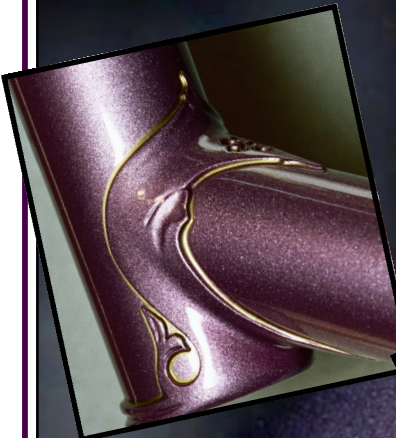
*4 light red mist insets
show custom lug with
optional relief carving
and gold pinstripe.*



*one custom
headtube
art option*



*Lots of fork options
for hybrids, including
this unicrown, also
regular and Stainless
polished crowns.*



*I once came upon an
entire hillside of these white
Columbines while climbing
above timberline.*

*Investment Cast
Dropouts now available
for most size frames and
can have rack/fender
eyelets*



Stainless Steel Frames

700C and 26" or 29" MTB,
Hybrid and Road
all styles.



*A stunning effect
is possible on the
Stainless frames by
setting off lugwork with
vibrant enamel color
over the polished
tubes.*



*The Stainless Steel frames are made
with Reynolds "953" Tubing,
probably the very hardest and
hardest to work metal I've
ever had in the shop.
New Columbus and
KVA Stainless
now here
also.*



*One new type of
threadless stem now has
an 8mm hidden steerer clamp.
The left side and back are
smooth and clean.*

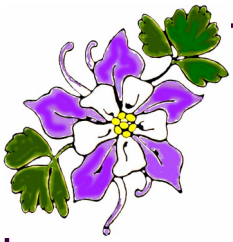
*The light gold/silver
line around the lugwork
is a naturally sharp
pinstripe detail.*

*All of the brass
or stainless fittings
and art metal options
can be added to the
Stainless Frames*

700C Mountain



Lots of possibilities, please call for the latest ideas



— Related Philosophies —

An important Columbine goal is to achieve the lightest possible weight in frames and completed bikes. While **geometry** affects the ride comfort of the bicycle, other more important factors are **weight** (mass), and the **distribution** of that metal mass. With judicious attention to this idea, the additional benefit of making a lighter structure that can **outlast** a heavier one is possible. Every part of the bicycle is a spring, and the term rigid is relative. The wonderful new super strength steels form excellent spring material, needing only control. A well sprung bike is faster because the rider and other parts of the bike are thereby isolated from the rolling resistance equation, where anything lifted even slightly over a bump takes energy from the forward motion of the system.

Ideally this concept starts as close as possible to the ground in the wheels. By building some vertical compliance into the wheels, in the resulting “yin/yang” of bicycle Physics, rather than resisting road roughness, the stresses and the lost energy are simply never precipitated in the first place.

Other than cost, this concept has nothing but benefits. Advantages are lighter weight, better pedaling efficiency and speed, better comfort, and longer life for components.

— Some Technical Ideas —

THE AERODYNAMIC BUDGET OF BICYCLES

It is very important that any choices for “wind cheating” components do not violate the previous concepts. While you may wish to have “Aero” wheels for aesthetic reasons, many times the Physics does not even come close to an honest improvement for the integrated whole machine. Extremely tall cross section and/or high modulus (carbon) rims or spokes that increase the vertical stiffness of the wheels at the expense of compliance will **cost** you energy not save it, as well as rob comfort and longevity of the system. Bicycles must move through cross winds much of the time, so things that may do well unloaded in straight on wind tunnel tests can fail in the practical reality of riding. There is a sound physical reason that they ride like “jack hammers”. Advertising hype is usually not good science in this area, beware the prevalent contradictions with Aero designs. Also, your body is the greatest loss of Aerodynamic efficiency by a long shot, and difficult to remedy. Everyone has aesthetic leanings that can’t be justified by more practical analysis, so I realize this area is subjective, but do your best to resist gross inconsistencies. When you add Psychology to the twisted Physics in these areas, the mix is unpredictable as may well be expected. Good luck, please call if you have questions.



Wheels

"The Other Frame"

I believe the wheels of a bicycle are at least as important as the frame for determining the ride quality, efficiency, and longevity of the system. There may be compelling subjective aesthetic reasons for one wheel type over another, such as seemingly wind cheating aerodynamic designs, but it's pretty hard to beat the physics embodied in the classic tension spoke wheel, especially with modern technical embellishments.

The design **must** incorporate non-redundant means for the system to **comply** with the various coarse and fine road undulations as close to the ground as technically possible. Usually this means **low** profile, very high strength rims, and generally fewer high angled spokes with stresses as balanced as technically possible, and especially super light **double butted** spokes. Most importantly, these parts will reduce the **dynamic loaded rolling resistance**, multi-directional wind resistance, and increase the life expectancy of everything above the rims.

Imagine Ferrari racing cars sold in component form. In the search for the springs and wheels, some would seek that heavy stiff feel of a Jeep, others would find parts to give it the plush feel of a Buick. The Ferrari people would find it hard to guarantee the feel that their car would have, or the longevity, or fuel mileage etc..

I stretched the scenario a bit to illustrate the point, but that is frequently what happens with custom bicycles. For instance, spokes come in gauges enabling a wheel builder to nearly triple the amount of that spring metal from the lightest unbreakable wheel to the heaviest. Thus, wheel builder philosophy can and frequently does detrimentally dominate bicycle behavior.

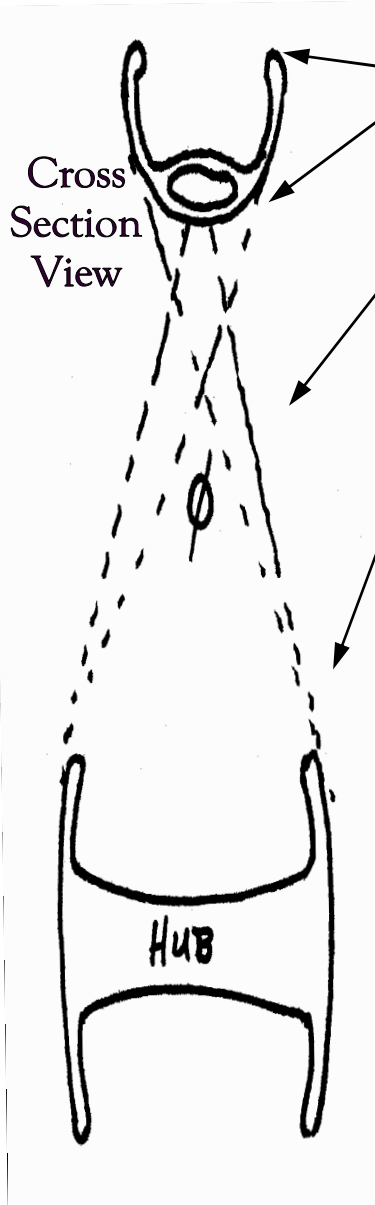
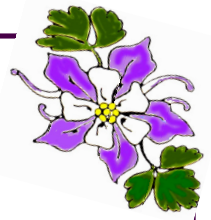
Double butted spokes give the wheel **essential spring** and longevity and relieve stress by allowing the metal more even movement over longer distance, thus preventing over stressing the endpoints where there may be imperfect stress raising points from the transitions imposed there by hubs and rims.

In the past, that spoke and hub incompatibility caused breakage. The radius of the metal at the head of the spoke didn't match the sometimes sharp radii at the holes in the hub. Spokes and hubs are typically now more compatible, enabling super light spokes (DT Revolutions and superlight Aero) to be unbreakable. Check this if you are breaking spokes, as there are exceptions.

Most of the legendary smooth ride and low rolling resistance of sew up wheels is the result of the **very light low profile rims**. As a result, sew up rims comply with the road "static" as close to the ground as possible saving energy for speed.

Your order confirmation will contain some guidelines for wheels that will match the frame for the most favorable comfort and ride quality, least dynamic rolling resistance, and best stress management for component longevity.

Wheels Cont...



* Lowest profile rim complies at the ground before any of the mass of the bike and rider can enter into the rolling resistance equation. Lower profile even than shown left if available would be best.

* The larger the lateral angle of the spokes, the more rigid the wheel will be laterally, for going around corners, sprinting, etc., and the more vertically compliant it will be to deal with road noise, bumps etc..

* The job of the hub in all of this is to increase the spoke angle also, and in the case of the rear wheel, deal as best as possible with the ridiculous impositions of the offset from the cog cluster on the right. Ideally, the flanges would be centered with the rim, like the front wheel, but minus that luxury, anything that will equalize the tension of the spokes from left to right will help. Some solutions include; differential tension, offset spoke holes in rims (especially like Ritchey), differential height flanges (taller on the right), heavier by one gauge spokes on the right, different cross patterns (lots of debate on this), Spokes that hook opposite sides of the rim tangentially, like Shimano wheels (great idea, technically tedious), and like the Rolf designs, using directly offset spokes (solves some problems with differential forces on the rim, but has drawbacks and doesn't really help the differential tension issue for the rear wheel in itself).

To sum up the whole wheel/frame/behavior issue, the most important idea to keep in mind is that in general, if a particular structural part helps isolate/float other supported masses above it from shock, including the rider, it will increase rolling efficiency, comfort, and longevity.

To achieve that, place superlight high strength and more flexible materials/unit weight (Titanium) at the extremities of the machine such as rims, spokes, seatposts, seatrails, and handlebars whenever available and affordable. Stiffer/unit weight Steel, Aluminum and Carbon materials would be best at the more central core/frame/stem/cranks. Highest strength materials can simulate lower modulus (stiffness) by allowing less material/mass to be used.

Columbines are Ridden!

Many customers start out the process saying that their Columbine will be their "Sunday go to meetin' bike. Then, a short time later, they have retired their entire stable of high quality bikes to favor the one Columbine. All of the little details add up to the feeling that the bike is just more enjoyable to ride, and becomes like a good friend. So much so that over the years, many have expressed very high mileage figures for their venerable Columbines of sixty to one hundred thousand miles. Keep up the good work.

— Frame Prices —



The following categories represent common points along the Custom Continuum that have been selected out for the purpose of listing the typical properties of the design and base price. You can order anything along the Custom Continuum even if you do not see that listed here, including mixed geometry and custom brazed on parts.

ROAD FRAMES: Always built with the worlds finest tubing, 100% Silver brazed, with custom swirl cut investment cast lugs and polished Stainless Steel dropouts, and a gold accented Columbine Flower cut into the top of the downtube lug, as well as the metalwork masterpiece of the integrated fastback seatstay clamp. Unique Columbine fabricated brazed on fittings done in polished brass or stainless include: internal rear brake cable ferrules on the top tube, pump peg, adjustable downtube shift cable stops, and chainstay cable stop, also stainless polished bottom bracket cable guides, and Columbine's patented polished Stainless Steel "Quickchainger" chain catcher and manager. Other standard brazed on fittings include two sets of water bottle mounts, and optional downtube shift bosses.

Finish details include a choice of over 35 colors of Dupont Imron paint over Dupont Corlar Epoxy primer, and richly detailed gold accented decals with the famous Columbine wildflowers and vines. **Base Price.....\$3700.00**

CROSS/HYBRID FRAMES: These frames are really occupying the long space between Road and Mountain, and the starting and ending points are fuzzy. They can be made with the lightest standard diameter Road tubing sometimes, or heavier larger diameter MTB tubing. Generally, they have sloped up top tubes for economy of strength and standover clearance, 700C wheels, and can have several different fork styles to meet your needs.

This is a wonderful class of "do everything" bike, and they really do all but the most extreme Mountain descents very well. They can be made for two sets of wheels, such that a Road racing set with 25C tires renders the bike a nimble quick speed bike that can be lighter than many racing bikes, or they can use knobby 47C tires for most off road work up to serious 700C mountain biking if built toward the heavy duty side of the spectrum. Built with lugs and 100% Silver brazed, these frames explore the amazing lower rolling resistance and natural spring suspension qualities of the larger wheels/longer spokes and longer fork, especially using the short butted DT Revolution 14/17 gauge spokes. I call these the "**Friend for life Bike**", and for obvious reasons, they make the best touring bikes. Lighter models can be built for long reach side pull brakes for less cost, but standard price is with cantilever/vee brake mounts. Fastback seatstay clamp and many brazed on parts shared with the Road frames where appropriate.

Parts, some tubes, and castings are not yet made to deal with the geometry issues in this class of frames, so there is quite a bit more labor in them due to the ticklish part fit up caused by difficult angles created by bent chainstays and seatstays and long forks, hence the difference in price from the Road frames. **Base Price.....\$3800.00**

MOUNTAIN FRAMES: were of course invented by Rich here at Columbine! A bold statement for sure, but if you look at the "modern" geometry of the MTB, you will see the geometry that Rich pioneered in the mid 80's when other major players had 68 degree head angles and 17" plus chainstay lengths. Columbine Mountain frames have the shortest chainstays in the industry, head angles from 71-72 degrees, polished Stainless Steel dropouts, investment cast lugs, fully 100% silver brazed for the ultimate strength, with options on steering column type, or without the fork for suspension fork substitutions of your own choice. Also, in the mid 80's I began to wonder why MTB's had to be locked into the 26" wheel, when a bigger wheel made a lot more sense for getting over rocky ground, and with the longer fork and spokes, it had much more natural suspension. I built my first 700C (29") heavy duty Hybrid/MTB frame in '89, and found it much more suitable for the kind of off road riding that I do. So ask about the big wheel Mountain frames. More tire possibilities become available regularly as other manufacturers explore this great Mountain wheel. If you are not going to need a 6" suspension travel downhill bike, big wheels might be just what you're interested in, and when naturally suspended, bikes stay light, simple and non-redundant as they were meant to be. Includes an elegant braze on package (see above), fastback stays, swirl cut head lugs, Quickchainger, cantilever mounts, and 35 colors to choose from. With a matched fork from Columbine **Base Price.....\$3800.00**

Frame only for suspension substitutions by customer

Base Price.....\$3400.00

SMALLER RIDERS: Please ask about the super possibilities with the 650 wheels (metric 26") for fast road bikes. With them, we can achieve an excellent frame geometry and handling matching the 700C models, and with the new superlight spokes, you can recoup the comfortable nature and rolling ease associated with the larger wheels. A bike made with 650 wheels requires more planning and forethought because of the potential for a bad match of wheels and components with the frame, but with a little perseverance, it is a worthwhile project. Prices are the same.

Metal and Paint Finishing Details

The Columbine Ultra takes the carved lug to new heights. Head tube artwork is unlimited, and many kinds of metals, stones and abalone shell inlay can embellish your creation.

Paint is baked on Polyurethane for durability rivaling powder coatings, and hundreds of color selection options. 35 standard colors.

Numerous Pearl Powders can produce great effects over base coats from white to black. Bases and Pearls can be multi-tone faded for amazing transition effects.

Kandy Urethanes have metallic base coats, brilliant translucent top coat colors

The Columbine made internal top tube cable stop/guide is funnel shaped on the inside, and along with a generous access hole from the seat tube makes threading the cable a breeze.



Cable ferrule access

Adjustable 5mm brass cable stays under the downtube ensure smooth friction free cables that won't interfere with steering forces.

"Diver's Helmets"



slightly older style

Polished Stainless Bottle and Front Deraillieur Mounts



In days of yore....we used to paint a lot more frames. Tim Ohlbrecht was our racer/painter for quite a while. It was an impossible job, but Tim mastered it.



Going Up...

Good News!

Your Columbine will likely live to increase considerably in value over the original price.

A timeless Investment....

and you get to ride it too!

SHORTS

NEWS AND VIEWS FROM THE WORLD OF CYCLING

A School of Two Wheels

WHERE THE HOT JOCKS AREN'T QUARTERBACKS—THEY'RE CYCLISTS

Too bad we didn't attend Santa Barbara Middle School (SBMS), a private school in California for heroes aren't cheerleaders or basketball players. They're "bike monkeys," kids who have completed comprehensive bike-repair classes. And homecoming has nothing to do with pigskins or gridirons: It's when the entire student body returns from a week-long bike trip. To top it off, once a year all students do a metric century (62 miles).

students arrive with a bike and helmet for a cycling clinic taught by the bike monkeys. On day three, all 175 students take an overnight bike trip.



SCHOOL'S OUT!
Homecoming at SBMS isn't about pigskins—it celebrates the finish of a weeklong bike trip.

But that's just a warm-up. Two or three times a year, everybody goes on an extended bike trip lasting a week or more, covering up to 350 miles. By the time you read this, SBMS students will have cumulatively logged more than one million miles.

"Nineteen years ago," Ferguson said, "there was a lot of skepticism about the cycling program. But if I tried to ax it now, I'd have a revolution on my hands."

—Scott Martin

No wonder SBMS alumni are racers on several countries' national cycling teams. Even the school logo boasts a bike wheel. "What weaves our academic and creative program together is the bicycle," says Kent Ferguson, SBMS's founding headmaster. Now 54, Ferguson came to SBMS 19 years ago after teaching, working in a bike shop and leading bike trips in the summer. He quickly launched an ambitious cycling program, believing bikes could teach kids about teamwork, independence, mechanical aptitude, pacing and expanding one's limits. "Burning off a lot of extra teenage energy" is also an added bonus. On the first day of school, new



your interest without clobbering you with safety. \$22 for first video, \$15 for each additional. Transit Media Communication, 800/343-5540 (N.J.).

Trips with kids. Do you find yourself daydreaming of going on a mountain bike tour in Utah's



Goodbye TV, hello trail

Western

Spirit Cycling in Moab, Utah, is willing to accommodate you. It's offering four family trips this year, a couple of which are doable with a Burley trailer tagging behind, and a support vehicle close by. The terrain is also forgiving enough for those junior high schoolers of yours who want to practice their riding skills in the great Southwest. Western Spirit, 800/845-2453 (UT).

One-wheel wonders. Quite a few readers wrote to us in praise of **George Peck**, the off-road extreme unicyclist ("Shorts,"

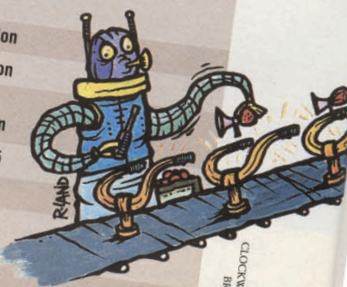
28 >

INSIDE THE NUMBERS

Quality vs. Quantity

BY ALAN COTÉ

Number of bicycles sold worldwide each year	85 million
In the U.S.	10 million
Of those 10 million, number sold by mass merchants (brands like Hu'ty and Murray)	7 million
Average price for a bike at a mass merchant	\$105
Assembly time for each bike	45 minutes
Number of frames built by John Murphy of Columbine Cycle Works each year	35
Price for a typical Columbine frame	\$2,200
Average construction time for each frame	70 hours
Working 40 hours per week, number of years it would take Columbine Cycles to produce 85 million bikes	2,861,952



CLOCKWISE FROM TOP LEFT: PHOTO BY OF RICH EYERBERGER

See observation from Bicycling Magazine

100,000 mile club anyone?

Over the years, I have had many informal reports of customers with really high numbers of miles on their Columbines. One more caller recently offered a full 100K guestimate. Lots more are in the 60 to 80K range. Keep up the good work!

— Typical Options and Prices —



LUGWORK OPTIONS:

Polished Stainless Steel Lugs and Crown in traditional "Custom" cutting, with Columbine Flower cutout in the downtube lug, and swirl cuts on the sides of the head lugs.....\$900.00
 (There is a variable continuum here also, any amount of filigree is available between "Custom" and "Ultra")
 "Ultra" lugwork in polished Stainless Steel, includes filigree work on main lugs and Crown, see photographs.
 Starting price for extensive filigree work on lugs.....\$1800.00

WEB-STYLE CHAINSTAY BRIDGE: Structurally speaking, the custom "Web" type chainstay bridge is quite an elegant bit of ticklish metalwork that greatly enhances hill climbing stiffness/weight, thus enabling use of generally one gauge lighter chainstays for the same stiffness feel. Fabricated singly, as chainstays taper and oval in a myriad of ways in that zone, for.....\$120.00

HEAD TUBE ART WORK, AND MISCELLANEOUS ART WORK ON FRAMES:

Usually for this price you can have a nice double flower in deep relief, with stamens, vines, and leaves done in four different color metals (main flower petals are gold filled*) and high polish. Entirely hand-cut.....\$350.00

"COLUMBINE • USA" Headtube Ribbons for a classic look. "Gold-filled" * material provides an economical Alternative surface to the expense of solid 14 carat gold and has about 50 times more gold than plating.....\$200.00

"COLUMBINE • USA" Headtube Ribbons in solid 14K gold.....Please Call

High-quality white diamond (1.5-2 mm) in the flower stamens (14K gold setting).....\$350.00

"Hugh" Hummingbird can be added to the flower arrangement in various compliments, with Nickel Silver (White metal) relief bird outlines, and contrasting enamel paints inside the outlines, and highly polished, (see photos). Entirely hand-cut, starting at.....\$250.00

"Ho" Hummingbird with Nickel Silver relief outlines, and **Abalone Shell inlay:** stunning color and polish, and an irresistible eye catching appeal.....\$450.00

Beautiful Dark Red Ruby for "Ho" to see with, add.....\$120.00

There is no limit to the custom artwork that can be added to special theme bikes, so please call or fax approximations of your wildest dreams in this extensive area that can be added to any frame even if it doesn't have Stainless Lugwork. July 1995 Bicycle Guide, pp. 48, 58. If you name a price you can afford, I can optimize the art for you.

All artwork must be precision masked with liquid painted on, and then after paint is cured thoroughly, cut out with soft chisel knives (soft to keep from marring the softer metals, and constantly sharpened) to complete the unmasking, and then finally all is again polished to burnish the paint edges, so the art is worked extensively 3-4 times. Sometimes, customers can catch this process in the shop happening, and if I'm not too nervous can stay and watch.

QUILL-TYPE HANDLEBAR STEMS FOR ROAD, HYBRID, AND MOUNTAIN:

Crafted from 300 series Stainless Steel with Gold filled* flower on the handlebar clamp portion, machined Aluminum cone quill expander, with recessed binder bolt. These stems compare for weight with Ti stems, and have more vertical adjustability than others.

The Ultra Stem with Stainless Steel tubing, TIG welded, polished, w/recessed binder bolts, and polished gold flower on the H-bar clamp has the same design as above. Custom extension angles and lengths to 14 cm., and even art.....\$450.00

THREADLESS-TYPE Stems feature a single hidden binder bolt on the quill end and handlebar end, and custom integrated and/or removable spacing for height depending on steering column length, flower as above.

Polished Stainless Ultra Models..... \$450.00

* **Sizing on stems** is completely custom, and any angle or extension lengths (4.5 cm to 15 cm) is available. If you have unique size/angle ideas, please sketch them up and mail or fax them to us.

* **Filled Gold** is a term used to indicate an art metal that has brass as the base metal, with a layer of Gold laser etched onto the surface for about 50 times more gold than with Gold Plating.



Braze-on Pieces for New Custom/Refurbish/Repaints

* BRAZE-ON OPTIONS:

Most braze-ons are included standard with a custom frame, please consult the frame description for the braze-on list for each type of frame. The following can be added to new frames if they're not included, or to repaint/refurbish jobs

- * Many of the braze-on parts below are custom made here at Columbine from Brass or Stainless/Steel. They are made here because they solve problems not addressed by commonly available parts, and are made without mass production machinery, so are a bit more expensive. Brass is used to reduce friction where cable or threaded adjusters may contact, and when polished, masked and clear coated, has a very popular classic appearance. If you don't see a particular type of braze-on mounting idea, ask and we'll try to accommodate that and make it for you.
- * STAINLESS STEEL WATER BOTTLE MOUNTS, Pair (two pair included with new frame)
WITH DIAMOND PLATES under the boss for decoration and strength.....\$45.00
- * POLISHED STAINLESS STEEL FRONT DERAILLEUR MOUNT, customized for strength,
not available currently without customization, hence a bit more time/money.....\$55.00
- * FENDER MOUNT Stainless for chainstay or seatstay bridges, standard 5mm x .8mm thread.....\$25.00
- * FENDER MOUNT Stainless for under Fork Crown recessed slightly for clearance, custom made....\$20.00
- * FENDER MOUNT SS for back of Fork Crown on forks with cantilever brakes, like bottle mount....\$25.00
- * RACK MOUNTS for seatstays, std. 5 mm boss through seatstay like large bottle mount, pair
STAINLESS RACK MOUNTS , polished and masked w/diamond base plates.....pr..\$45.00
- * LOW RIDER RACK MOUNTS for fork, custom made for strength/fit, 5 or 6 mm (specify)
STAINLESS LOW RIDER MTS. as above, polished and masked.....pr..\$55.00
- * CABLE FERRULES in polished brass for INTERNAL cables, up to 6 for three hidden MTB cables,
Columbine custom machined with special funnel shaped hole inside for easy cable threading...ea...\$30.00
- * GENERATOR MOUNT for chainstay type centered on tire, customized for each frame.....\$25.00
- * DROPOUT EYELETS on Stainless dropouts, usually included w/touring frames, for others, pair....\$35.00
- * POLISHED BRASS "divers helmet" style stops for Ergo/STI brake/bar end mount shifting use 5 mm
adjusters, mount about 3" down from down/head tube joint. Allow adjustment even while riding
Best used with cables crossing twice, once in front of head tube, and then below mounts, super
smooth hidden cable routing with minimum friction and no rubbing of paint, custom made pair...\$45.00
- * COMPUTER MOUNTS , or lighting wire entry reinforcements, typically.....ea...\$20.00
- * SPLIT ENTRY CABLE STOP simple stop for brake or shift, steel,ea...\$20.00
- * As above, but in BRASS, polished, masked, unmasked, enameled.....ea...\$35.00
- * PUMP PEG usually for behind the head tube, made of brass, polished and masked, enameled.....\$25.00
- * SHIFT BOSSES for std Down tube shifters as in days of old, option included on new frames,.....pr..\$30.00
- * COLUMBINE'S OWN QUICKCHANGER patented Chain catching and management wheel
changing aid, change wheels with speed and style, and keep hands clean, polished and masked
Stainless Steel. A must for a classy pro bike, try it.....Included with new frames.....\$25.00

Braze on parts can be made in house for special needs, please ask if you don't see a part that you want.

Paint

Possibilities...

Classic style on this 700C Expedition Hybrid frame that became the core of equipment for a trip carrying Niles Guthrie over 9000 miles along the mountain trails from Tierra del Fuego to Seattle.

Custom option, all three cables can be run internal for snare free operation during carrying, lifting.

Gold in Flower hand cut into the downtube lug on all frames

Photos cannot capture the festival of color on this frame, combining several base colors and a few different pearls plus metallics.



quite satisfied with it.

The Murphy brothers started their company in 1979, working out of a garage in Boulder. "I had a job in a tool and die shop and was going to the University of Northern Colorado," John Murphy said. "My brother worked in a bike shop. He had the bike interest but didn't have the machine-shop knowledge or the tools. He built a few frames on his own, and I built a frame at the college—there was a professor who actually gave credit for the project," he recalled. After bantering on about frames while taking a cycling tour through the Western United States in 1977, John and Richard decided they could do a better job at frame building than others were doing.

"We knew right away that we wanted to use stainless steel. We said, 'That's the stuff,'" John related. After talking to lug-casting expert Hank Folsom, Columbine had its first stainless steel lugs a year later. But the main reason that frame builders pass on stainless

John and Richard Murphy

THE BUILDERS

Columbine is a rugged wildflower that grows high in the Rocky Mountains—it's the state flower of Colorado. John Murphy and his brother Richard chose this flower to symbolize their approach to frame building: stunning, unique beauty.

Unquestionably, a Columbine frame

is quite different from any other bike in the world. It's downright aristocratic. Lugs are sculptured in dizzying detail and made from special, custom-cast stainless steel. Jewels, as in honest-to-God diamonds and rubies, sit in the frame's head badge. A typical custom builder might spend 20 to 25 hours building a single frame. The Columbine we tested took John Murphy about 120 hours to complete—and he still wasn't



steel is because it's extraordinarily difficult to work with. "It eats tools alive," John explained. "Carbide-tip hole saws will last for years on Prestige tubing, but we can't get a single cut on stainless. And if you try to cut it with a jeweler's saw, it makes a sound like you're trying to cut a Coke bottle."

Despite the bratty nature of stainless steel, it remains Columbine's favorite material. "It's just an awesome metal. It's like it's alive—it has work-hardening characteristics beyond that of anything else," John related enthusiastically. Beyond its physical and mechanical prop-

erties, stainless steel offers the perfect material for Columbine's delicate, ornate lug work. The shiny lugs on a Columbine look chrome-plated, but the finish is just plain stainless steel. "For artwork, plating isn't good. The process is de-



structive in itself; you never know if you're going to end up with scrap metal."

While fancy lug and joint work make a Columbine stand out, the brothers put the same amount of thought into the design of their frames. "We get into the engineering on these. We're very conscious of where the butting is. We believe that the whole bike is a spring, and the transitions in the joints are of the utmost importance for long life," John said. "We try to push all the limits."

There would seem to be an inherent struggle between art and engineering with a Columbine frame, but the Mur-

phys have overcome the dilemma. "On this test frame, you're penalized by about an ounce for the artwork. But you can conflict with artwork and engineering. For instance, we don't mess with the down tube or the top of the top tube. But the webbed bridge behind the bottom bracket is aesthetically pleasing and stiffens the rear end."

If you think of a bicycle as simply something to ride, the detail work of a Columbine could seem grossly excessive—even among hand-built frames. What compels the Murphy brothers to go to such excruciating detail? "When you get something to work, do you stop there or do you edify it? We started edifying the process and this is what ended up," he said. "If I have 150 hours to build, I'd certainly get more gratification out of making one really nice frame than three regular frames."

THE BIKE

I must start by saying that the price for the Columbine frame shown is \$5000. Aside from not-for-sale prototypes, it's the most expensive bike I've ever ridden. It should be noted that this particular frame represents some of the finest work Columbine has ever done and that the company builds more ordinary frames that start around \$1400.

Our test bike used light-gauge Tange Prestige tubing. Of course, the Murphys included their own special touch in regards to tubing selection: The bike's down tube is actually a Prestige mountain bike top tube with one butted end chopped off. This careful design process allows them to produce steel frames with impressively low weights—a 56cm frame checks in around 3.1 pounds, while a fork is about 1.2 pounds, according to Murphy.

The Henry James—built stainless steel dropouts look shockingly thin and save about 2 ounces, but they required a spacer washer between the derailleur and frame in order to make the bike shift correctly. Also at the rear of the bike is the Columbine Quikchainger—a small tab that's



■ *Murphy's work could be a museum piece. "Part of it is to get out of the drudgery of just grinding metal and cranking out frames."*

brazed on to the right chainstay. The patented Quikchainger simply catches the chain when the rear wheel is removed. No dirty hands, no struggle. It's a simple but brilliant idea. It would be part of every new bike if Shimano had thought of it.

Beyond the cost and regal appearance, the Columbine performed as a handmade bike should. A tire-clearance indent on the backside of the seat tube allows for one of the shortest rear triangles around. Jump out of the saddle, and the Columbine responds like the tightest, stiffest track frame you can imagine. The rigidity of the short chainstays more than makes up for the inherent flexibility of the thin steel pipes.

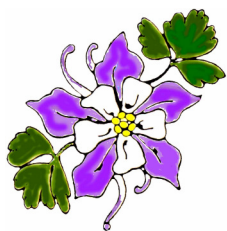
Those out-of-the-saddle efforts gave me a glimpse of the front side of the Columbine's head tube. Mounted in the head badge were two diamonds and one ruby. "Three or four years ago I put my first jewels in," John said. "The jewels are cheap—it's the setting that's expensive."

by Alan Cote

Available from Columbine Cycle Works, P.O. Box 338, Bellevue, CO 80512; (303)224-1168.

PHOTOS: MATT LANNING

BICYCLE GUIDE July 1995 49



— Painting Options —

These options are added to basic paint schemes on new frames or repaints
Many paint jobs are quite complicated and best talked out on the phone for price.

- * Two tone fade paint, additional color price per color from standard list below.....\$70.00
- * Two tone masked paint job per extra std. color (usually with head tube and seat tube panel).....\$220.00
(inquire about other masking styles and costs)
- * Custom color selection from Imron Chart that is not on the stock (standard) list.....\$75.00
- * Pearl Colors, usually over a black or white base coat, but any solid color can be used for a base color for unusual effects especially with fade jobs and 2 or 3 colors. Dark or black base.....\$175.00
- * Pearl Colors with light or white base colors.....\$230.00
- * Gold Pinstriping around lugwork, with clear Imron over the top including bottom bracket.....\$75.00
- * Pump painted to match frame (when painted at time of frame painting)
New Silca or new style light Zephal frame fitting pumps (others are more, please inquire).....\$50.00
- * Fenders are painted, but it's hard to give a standard price because preparations vary, please inquire.

FRAME REFINISH/REPAINT OPTIONS: (For older Columbine frames)

Repaints have the same color offerings as new frames

- * Base price for Repainting (Columbine frames only), includes paint removal, inside cleaning, Dupont Corlar Primer, Imron color coats, and inside corrosion protection renewal, with one color from standard list.....\$450.00
- * Columbine Decals replacement (current type, goes back to mid '80's).....\$40.00
- * Multiple Clear Coats over decals or other art work or for added protection over pearls etc.....\$80.00

STANDARD COLOR OFFERINGS LIST:

METALLIC COLORS: Light Continental Blue, Patriot Blue, Medium Concord Blue, Sovereign Blue, Mariner Blue, Pacific Blue, Medium Aqua, Plum, Burgundy 44456, Dark Maroon 4454, Light Violet, Wine, Regent Red 45731, Red 44402, Light Rose, Persimmon 44466, April Green, Jade Green 14283, Sea Sprite Green, Light Saddle, Slate Gray, Pewter Gray, Indian Silver N8075.

SOLID COLORS: Red 4992, Red 6543, Red 8554, Coral 29605, Blue K9359, Aquatone Blue 58360, Light Green 62703, Green 7666, Solar Yellow 44162, Cream Almond 43938, Oxford White 4296, White 508, Black. The above solid colors will also make good base coats for pearls.

PEARL COLORS: Super fine flecks of color powder added into clear Imron, some have more than one subdominant color resembling a rainbow, but subtle. Best effects over dark or black base, as little light comes from behind to compete. **Green, Red, Blue, Violet, Yellow in stock, can be two tone faded.**

KANDY URETHANES: Kandy paints use a two part system, first a base, usually metallic Silver or Gold or having those metallic flakes and additionally a translucent hue that reflects light through the translucent top coats, and interacts to give a compound color. So, color charts have the base coats arrayed across the top, top coats down the side, and the matrix of the combinations resulting arrayed as a product of each combination on the page. Exceptional Flamboyants with just **Gold or Silver base** and topcoats such as **Cobalt Blue, Kandy Apple Red, Burgundy, Purple in Stock Kandy colors**\$250.00

These paints and the many included additives are exceedingly expensive (and toxic), so I have tried to simplify life and keep off of the EPA superfund list by stocking a minimum of paint. So if you don't see a color there you like, just ask and I probably have it, or can mix up a close match, and will be glad to sell it to you for the standard price or a bit more for the mixing. The standard list is generated from a preponderance of requests for them. Check local Automotive paints dealers to see or buy color charts, or visit the website for DuPont. They can sell you a color chart.



Stems n Things

Polished Stainless Handlebar Stems

Traditional classic quill type road stem and similar threadless types, with integrated and/or removable spacers.



Web Chainstay Bridge



Each piece is cut and fitted, as chainstays vary drastically for taper, oval and diameter. Notice the pieces are interleaved with the shell sockets.

It's quite a trick trying to get all that to sit still while brazing at over 1100 degrees F.

Optional custom web bridge on the jig with the bottom bracket assembly just before brazing. It uses ticklish construction methods for a stiffer hill climbing feel for an overall lighter frame.



The Quikchainger in action

Double exposure shows the chain before the wheel is dropped, then afterward. The Quikchainger is inside the chain circuit and catches the chain immediately.



*Bicycle Guide July 1995 Road Test:
"The Patented Quikchainger simply catches the chain when the rear wheel is removed. No dirty hands, no struggle. It's a simple but brilliant idea. It would be part of every new bike if Shimano had thought of it."*

The Quikchainger is...

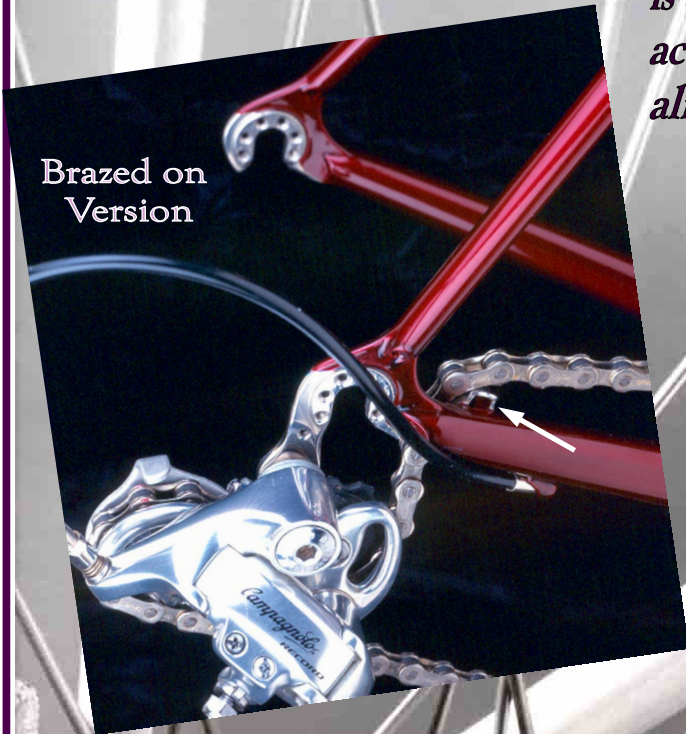
- * AN ELEGANT CHAIN CATCHING DEVICE
- * AN ACTIVE CHAIN MANAGEMENT AID THAT CATCHES AND HOLDS THE CHAIN IN PERFECT ALIGNMENT FOR WHEEL REENTRY DURING CLEANING, TRANSPORT, AND ROUTINE WHEEL CHANGES SO THAT YOU NEVER HAVE TO TOUCH THE CHAIN AGAIN!
- * THE PERFECT WAY TO MAKE WHEEL CHANGES FASTER THAN SEASONED PROS
- * AN EFFECTIVE CHAINSTAY PAINT PROTECTOR
- * ALMOST INVISIBLE AND LESS THAN 3 GRAMS!



Almost Invisible..

and often forgotten, until the instant the wheel is dropped, when the Quikchainger snaps into action to catch and hold the chain in perfect alignment for smooth quick wheelchanges,

Brazed on Version



Left Side View



Only 3 grams of simple, effective, elegant, long overdue chain catching and management aid

Never touch the chain again!

Universal Clamp On Version



The Quikchainger Captures and holds the chain aligned for perfect re-entry of the wheel. The crankset can even be spun and the chain will ride smoothly.

"It's that third hand you always seem to need changing wheels"

Patented

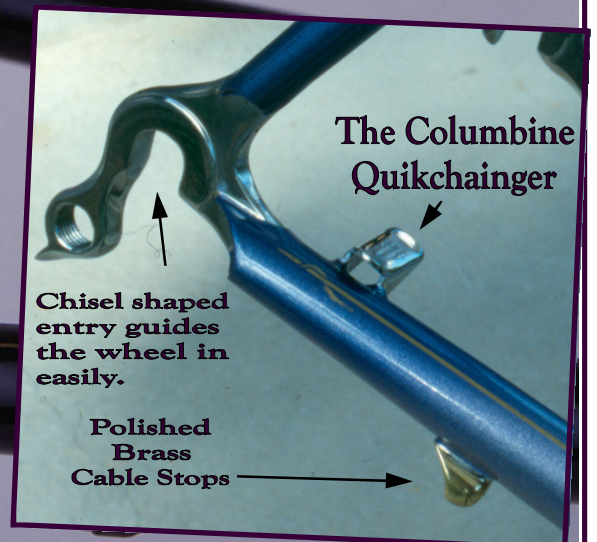
So your hands stay clean! 27

The Metalwork...

*"An investment in
timeless quality"*

*For Ultralight construction
that spans the test of time,
fine fretwork in hard metals,
and high performance all in
one, try a Columbine*

*Sculpted Polished Stainless Ultra High
Strength Dropouts and Columbine's Patented
Quikchainger make managing professionally
quick wheel changes a snap*

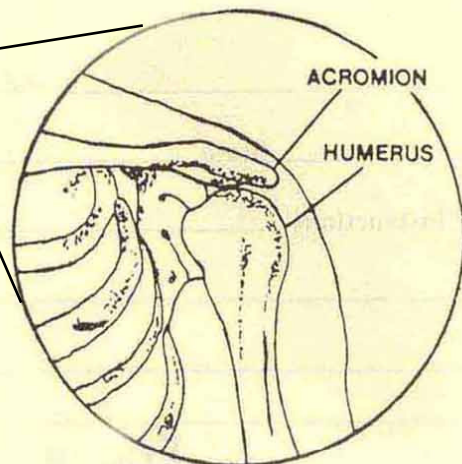
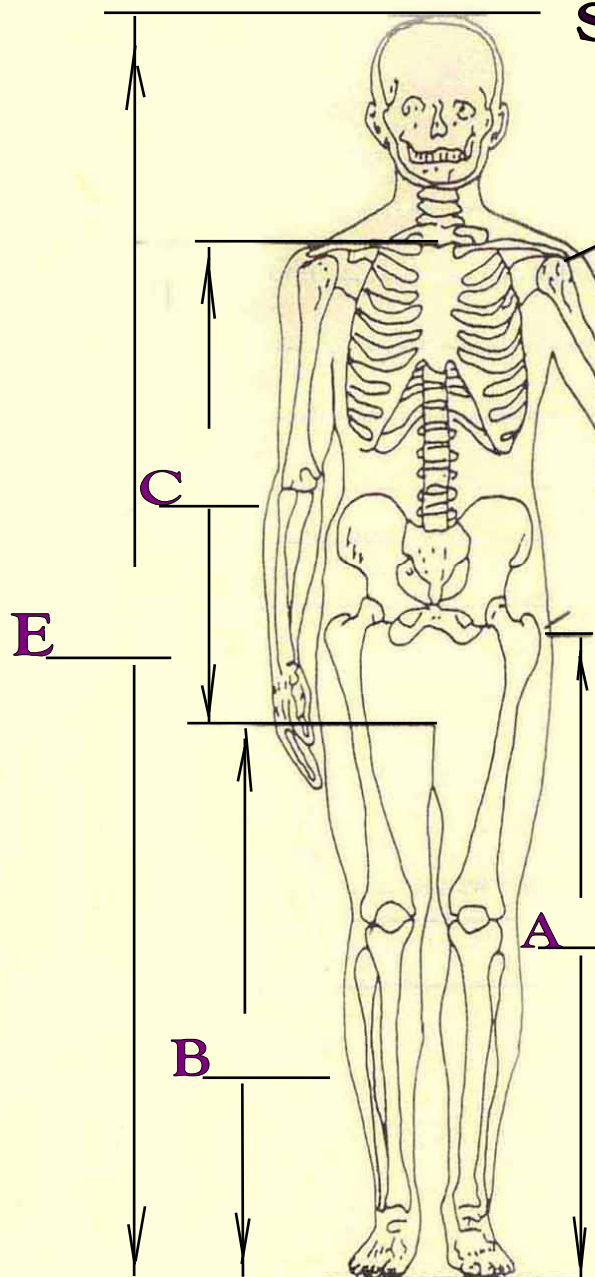


Ph: 707-937-2080 www.ColumbineCycle.com

Columbine Cycle Works, Box#339, Mendocino, California 95460

— "Sizing Man" to the rescue! —

Sizing Help



* Columbine can help you arrive at a particular frame size if you cannot avail yourself of local help, but the final responsibility lies with you for the size chosen.

**** Taken by themselves, bone measurements are a poor predictor of bicycle size. It is a ballpark approach that when coupled with the currently ridden bicycle dimensions and some verbal input can come quite close to your size. Bicycle sizing needs to be dynamic at best, but even then psychology and your prior opinions among others' must be incorporated to winnow a solid number from fuzzy inputs.**

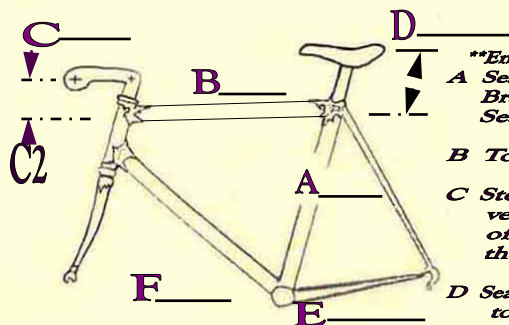
For the above reasons, and also because the human body is extremely adaptive, it is difficult to arrive at a "perfect" size, as that doesn't exist. It is a preference that can and does change over time. Most methods of sizing will get you to within a high 90's% of true size, and well within minor adjustment zones of components.

Existing bike measurements are arrived at by close adjustment over the miles, and those figures can be redivided to more correctly fit out the new frame as to the relative seat height/seat tube measure to help give the best drop from seat to handlebars. It is similar with the horizontal top measurements. A. Leg Length. Rotate leg to help find center of movement point B. Inseam. Use wooden dowel (top side) to help measure this one C. Torso Length. Use the dowel here also, topside to sternum notch D. Arm Length. Measure to the topside of a dowel in your hand for this E. Height Measure.

Very Important!

****List the dimensions of the frame you're now riding**

***Please list all measurements in Centimeters center to center or as shown**



****Enter the following in the blanks left.**
A Seat Tube from Center of Bottom Bracket to Center of Top tube along Seat tube

B Top Tube, also centers measure

C Stem Extension, also try to get a vertical rise from the centerline of the top tube to the center of the handlebars C2

D Seat Height from Center of Top tube to Top of seat along post.

E Bottom Bracket spindle center height, measured with bike held vertical and please state tire/wheel size.

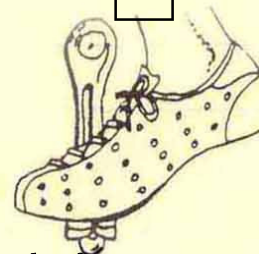
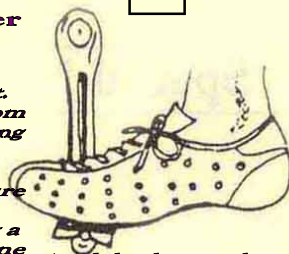
F Front Center, measure from the front axle to the bottom bracket spindle with wheel straight.

*** RIDER WEIGHT _____ #**

**** This drawing may not look like the frame that you are ordering, ie MTB or Hybrid, but if you list the measurements for any bike you're used to riding, it will give me the information to help position you for the type you order**

Pedaling Style,

☐ Check one ☐



Any bike that you have adjusted to fit your anatomy well is quite valuable because it incorporates musculature and comfort, and you can use it to experiment with. The seat measurement from such a bike is worth much more than bone measurements, and the top horizontal measure is a good starting reference.

Please write us a short synopsis of your efforts to get your size over time on different bikes, and any discoveries to apply here.

Columbine Cycle Works

Ph#707-937-2080



—Order Form—

Name _____ **Address** _____

City _____ State _____ Zip _____ Phone _____

Shipping Address if different from above:

DATE: _____

Frame Description	Price
Metalwork Options	
Paint and Finish Options	
— Thank You! —	

PAYMENT: A 40% non-refundable deposit will affirm your order. Personal checks are OK for the deposit and for the final balance up to 10 days before shipment. For faster shipment, please send certified checks or money orders for the final balance due.

Frame Subtotal	\$
In Ca. Sales Tax	\$
Shipping and Handling	\$
Total Amount	\$
Deposit Amount 40%	\$

Please send to the address below:

Columbine Cycle Works, P.O. Box #339, Mendocino, California 95460-0339