AUGUST 1989

WILDERNESS TRAIL BIKES 1990 PRODUCT REVIEW

Wilderness Trail Bikes makes an extensive line of fine components for other builders and avid riders everywhere. The three founders have also collaborated with other leading manufacturers to license many of their designs under other industry brand names. For example:

Charlie, Steve, and Mark are the designers of the line of Specialized Mountain Bike Tires. The Ground Control, Ground Control/S, Hardpack, Crossroads II, and Ground Control Extreme incorporate tire design principles that raised performance standards. Most of these design principles have now been adopted by the off-road tire industry. Wilderness Trail Bikes has specified the geometry for the 1987 Trek Mountain Bike line and more recently, licensed the WTB Grease Guard Component System to SunTour for worldwide manufacture. Charlie Cunningham licensed SunTour to manufacture and market their version of the roller-cam brake. The contributions by these three gentlemen are broader than generally realized. They are collectively responsible for pioneering the following:

The first use of toe clips on mountain bikes (which was considered inappropriate at the time.

Rear hubs with 136mm rear dropout spacing with zero dish, and extra-wide front hubs with easily replaceable cartridge bearings

Welded aluminum mountain bike frames

Straight-blade thin-wall Type II racing forks with tubular crowns

The original patented Speedmaster™ Roller-Cam Brake and Mini-Cam Brake for skinny tire bikes

Toggle brakes for mountain bikes

Sloping top tube and large diameter seatpost as a more efficient use of the properties of aluminum

The Patented Grease Guard™ bicycle component system for extended bearing life and low maintenance

The original one-piece fork blade drawings which resulted in the Unicrown™ and Unifork™

LD or Gooseneck stems for dropbars

Flared or Drop-style bars for mountain bikes

Twin inner tube used in mountain bike competition

Chain guide and slap protector for mountain bikes

Toe Flips for quick and easy toe clip entry

Rear drop out with 45° slots and super strong derailleur hanger

Alloy single-strut stems for mountain bikes

Taper mounting of stems to avoid knee injury

Designs for Araya indicating the basic design and shape of the first modular section mountain bike rim, the RM-20

In-line cable adjusters for mountain bikes

Rubber chainstay protectors

Safety sleeve in mountain bike fork steerers

Mountain bike fixed angle seatposts

Tire pumps mounted inside the seat post

Progressive mountain bike frame geometry

Thumb shifter mounts for drop bars

One piece aluminum stem with 30° rise for mountain bikes

THE WILDERNESS TRAIL BIKES GREASE GUARD ™ SYSTEM

Wilderness Trail Bikes proudly introduces the Grease Guard™ Component System, a revolutionary new technology which overcomes the problem of contamination and wear in bicycle bearings.

Wilderness Trail Bikes solves this problem with their patented Grease Guard™ Component System. The Wilderness Trail Bikes Grease Guard™ System purges and relubricates each individual bearing from the protected inside edge to the exposed outside edge. This allows the rider to overhaul bearings in seconds. The system is based on the design and riding experience of Charlie Cunningham, Steve Potts, and Mark Slate, who have found that three different mechanisms contribute to the degradation of bearings in bicycle components.

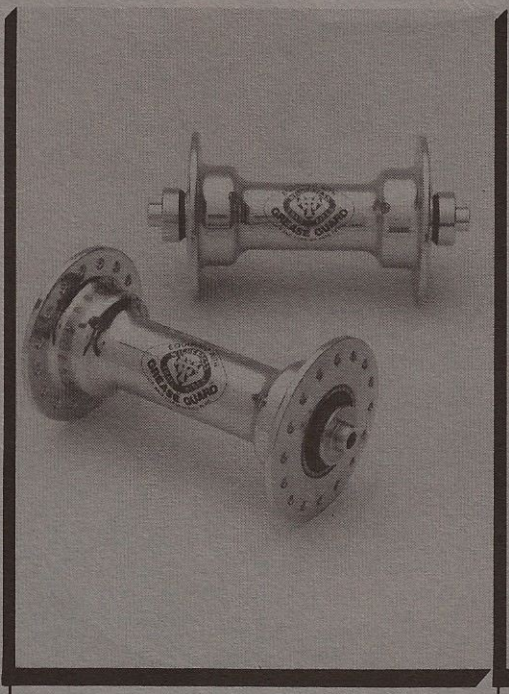
1) Abrasion from grit which enters the bearing (usually in the form of mud or water-borne particles.)

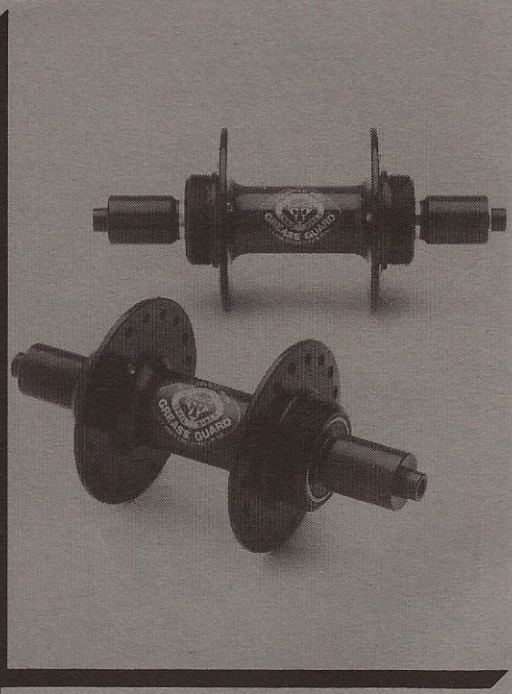
2) Corrosion caused by water which enters the bearing, causing oxides to form, and pitting of the bearing surfaces.

3) Wear from normal motion. Our experience has shown this to be negligible compared to abrasion and corrosion. The low speed, high load situation found in bicycles favors the use of precision cartridge bearings if they are kept clean.

"We came to these conclusions when we saw how long bearings last in the Grease Guard™ components if they are lubricated diligently. Grease Guard protected bearings subjected to almost daily off-road use in all types of weather have no more detectable play than the day they were installed over two years ago."

The Wilderness Trail Bikes Grease Guard™ Components solve abrasion and corrosion problems. The frequency of necessary lubrication varies with conditions: in wet weather they should be greased after each ride; in dry weather once every two weeks is enough. The standard bearing seals are effective at keeping dry dirt and dust out. Our hub literature explains how conventional bearings fail in wet or muddy conditions.





OTHER GREASE SYSTEMS

The Grease Guard™ System differs in three very important ways from systems which simply fill the whole cavity between the bearings with grease. The patented seal designs used in Wilderness Trail Bikes Grease Guard™ efficiently control the replacement grease.

1) UNIFORM CLEANING AND REPACKING

With Grease Guard™ the grease flows through the bearing uniformly from the inner protected side to the outer exposed side. In other systems one of the two bearings may not get adequate grease due to pressure variations. Each bearing must be independently lubricated.

2) FRICTION FROM GREASE SHEAR IN OTHER SYSTEMS

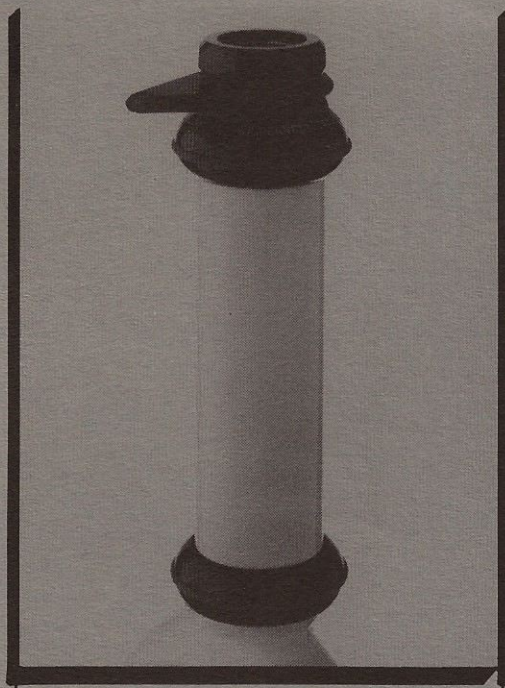
Bicyclists don't need more friction, they need less! A normal cyclist has only about one-half of a horsepower at his or her disposal. Unlike motor vehicles, cyclists can't afford to waste their output overcoming excess friction. The inner Grease Guard™ seal barely contacts the rotating axle during use insuring minimal friction. Only during actual greasing does the seal flex and pinch around the axle to prevent leakage of grease to the inside of the component . The only friction is from the grease in the bearing. The other systems fill the whole cavity, which causes grease to be "sheared" constantly as the parts turn. Your limited energy goes into churning grease.

3) WEIGHT

Considering the effort and expense today's bike builders and users put into having light and efficient bikes, adding a pound or so of grease to your frame doesn't make sense. It may not be noticed by novice riders but it definitely bothers most experienced riders.

WILDERNESS TRAIL BIKES GREASE GUARD ™ HUBS

Patented Wilderness Trail Bikes Grease Guard™ Hubs provide a breakthrough in bearing maintenance. The Grease Guard™





System allows the user to purge the bearings following exposure to contaminants such as rain, mud, and stream crossings, and wash water. As new grease enters the bearing, it flushes older grease from the inside edge of the bearing, moves through the bearing and then under the outer seal, pushing contaminants ahead of it while filling the bearing with fresh, clean grease. Using low viscosity, waterproof Goose Grease with the Grease Guard™ seal results in a low rotational friction. The individual purging of bearings means there is virtually no grease in contact with the axle and minimum grease carried near the bearings. This prevents undesirable "grease shear" (unnecessary friction) found in systems which fill the whole cavity between bearings with grease. With proper maintenance this system guarantees longer bearing life and lower maintenance costs than a standard sealed bearing hub.

The Wilderness Trail Bikes Grease Guard™ Hubs are made of the finest aluminum, and machined to precise tolerances from solid billet. The design optimizes the location of the freewheel with respect to the flanges so that the wheel has a better spoke bracing angle. The contour of the spoke holes greatly reduces stress at the spoke bend. The result is stronger, longer lasting wheels.

This hubset will outperform and outlast any other on the market.

WTB/KING GREASE GUARD ™ HEADSET

Wilderness Trail Bikes has contracted with Chris King to incorporate Grease Guard™ in the popular King Headset. Sold exclusively by Wilderness Trail Bikes, available in either black or silver, this special thrust-type sealed bearing headset is not as susceptible to maladjustment, as conventional ball bearing headsets are. A word on ball bearing headsets: a roller bearing headset does not allow the small amount of movement or "give" necessary to accommodate the flex in the steerer tube which occurs in normal riding. Roller or needle bearings can cause acute stress on frame and fork. A ball bearing acting between a cup and cone will allow the necessary movement which protects the parts when great forces are applied to the fork.

The lower race of any headset is exposed to large amounts of contamination thrown against it by a front wheel spinning through gritty water crossings. If the corrosive elements are not removed the bearing steel and ball bearings themselves will become pitted and worn. A loosely adjusted headset will cause the fork steerer to be hammered, promoting failure. If a Grease Guard™ headset is properly adjusted and greased promptly after wet rides it will give years of trouble-free service. Remember that this headset requires approximately 5/16" extra stack height.

WILDERNESS TRAIL BIKES GREASE GUARD ™ BOTTOM BRACKET

The Wilderness Trail Bikes Grease Guard™ Bottom Bracket is once again available after a long hard search to find the appropriate bearing. This is not a conventional threaded cup adjustable bottom bracket, but a press-in cartridge bearing with standard 17mm inside diameter and 35mm outside diameter. This is the same size used by Cunningham, Potts, Klein, Fisher, Ritchey, and of course Wilderness Trail Bikes. Frames having conventional threaded bottom bracket shells may be reamed, a service offered by Wilderness Trail Bikes, to fit these bearings. In any case the bottom bracket shell must be drilled on either side with a small hole for grease inlet, a relatively simple operation.

Contamination and load are the primary sources of bottom bracket bearing wear. The precision and load bearing capacity of a cartridge bearing is much greater than that of a cup and cone type adjustable bearing, an advantage in the demanding high load application of bicycle bottom brackets and hubs. The ability to individually purge and relubricate each of these bearings adds greatly to their longevity. As with all Grease Guard™ components, it is essential that the user maintain the bearing with regular servicing (always after contact with water) using the Wilderness Trail Bikes Gooser.

WILDERNESS TRAIL BIKES GOOSE GREASE ™

Our smooth white lubricant provides true protection from corrosion and wear for all moving parts on today's mountain bikes.

Although Goose Grease™ was engineered specifically for use in Wilderness Trail Bikes Grease Guard™ components it is ideal for cables, pivots, and any other area of your bicycle needing a long lasting film of lubricant.The corrosion prevention properties, penetration and low friction qualities of this grease are due in part to the high Teflon content. The Teflon component of Goose Grease becomes atomically bonded to the surface of bearing steel to the depth of .0002" giving the utmost in rust resistance and lowest coefficient of friction of any friction modifying material. Goose Grease also has exceptional penetrating qualities and is non-toxic, the best lubricant available for all your low friction needs. Goose Grease is the ONLY grease recommended for use with Wilderness Trail Bikes Grease Guard™ Components. Other greases can compromise or damage Grease Guard Components.

REMEMBER: Care of Grease Guard™ components depends on your diligence. After returning from a wet ride lubricate immediately. If moisture is allowed to sit in a ball bearing it will rust. Clean fittings with Q-Tips. Remove contaminants from grease ports (where no fittings are used) with a pick if necessary. GOOSE 'EM!

WILDERNESS TRAIL BIKES GOOSER™

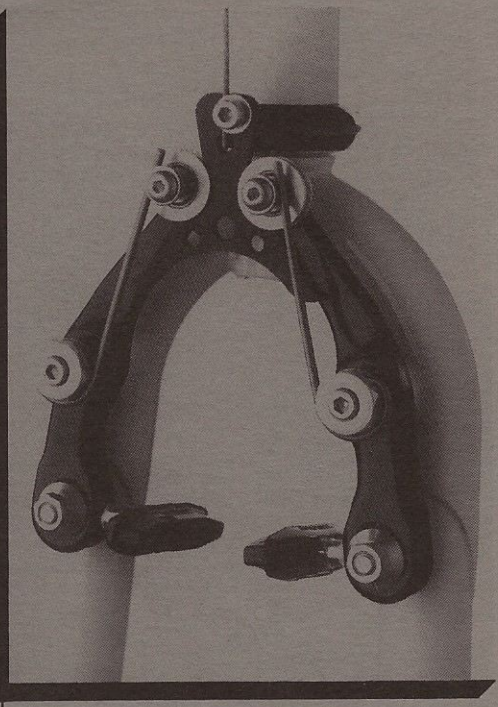
The WTB Gooser is a grease gun system allowing clean, trouble-free, and precise lubrication. Refill is as simple as screwing on a new tube of Goose Grease. The Gooser has a long tip for easy access to hard to reach places and comes complete with one 4 oz. tube of Goose Grease.



WILDERNESS TRAIL SPEEDMASTER™ROLLER-CAM BRAKE

This original, patented roller-cam brake for fat tire bikes has undergone continuous development for the past eight years. The lightweight, superior materials, replaceable main pivot bushings with lube ports, independently adjustable linear springs, sealed ball bearing pulleys, better performing, stiffer brake pads, and superior tire clearance are significant differences between this and the more commonly seen mass-produced roller-cam brakes. The independently adjustable brake springs return the brake arms to center accurately, as well as giving a range of tension adjustment. If greater mechanical advantage is desired (such as for mountain bike tandems) it may be achieved by filing the ramp angle a few degrees more acute.

The original Speedmaster Roller-Cam Brakes can now be fitted to production bikes with their stock metric-sized brake studs. Wilderness Trail Bikes has developed an adaptor cap for the stock stud to increase diameter and lengthen the pivot surface. This allows Wilderness Trail Bikes to control tolerances while



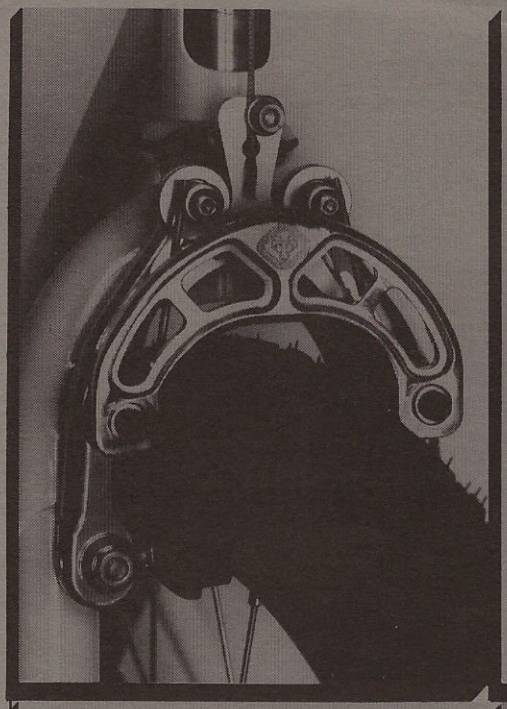
increasing bearing surface. For easy maintenance, the adaptor caps are grooved, enabling 360° lubrication through a small hole in the brake arm. A must for those who demand the best in brakes!

The enemy of any braking system is friction in the moving parts. This brake is designed to minimize friction but it is essential that these brakes be properly aligned and positioned. Pay particular attention to the cam/roller alignment. A satisfactory installation is the responsibility of a competent mechanic.

Instructions and guidelines are available with our brakeset.

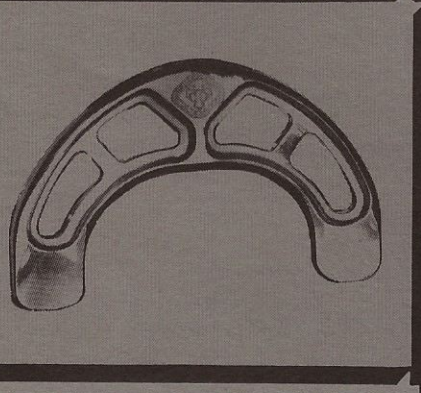
WILDERNESS TRAIL SPEEDMASTER™ ROLLER-CAM BRAKE FOR SKINNY TIRE BIKES

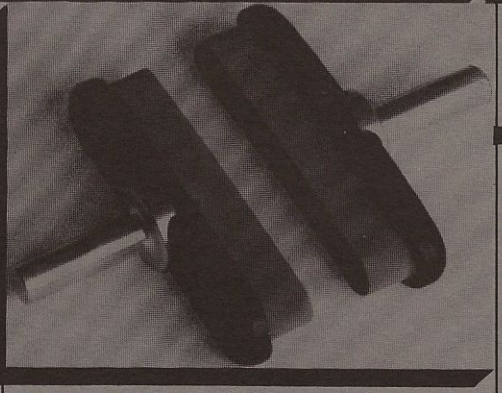
This newly developed brake is protected by U.S. Patent and is essentially the same as the fat tire version with dimensions characteristic to the lesser space and power required. The stiffness of this braking system gives precise response and excellent feedback and is made with skinny tire tandems and cyclo-cross bikes in mind. It requires positioning and welding of two special studs included with the brake set.











WILDERNESS TRAIL BIKES BRAKE BRIDGE

The WTB Brake Bridge will improve braking power and modulation on bicycles with Roller-Cam and "U" Brake mounting bosses. It is a functional way to brace the mounting posts against the tendency to flex outward from braking forces. Each Brake Bridge is a work of art made of aluminum, weighing only 32 grams.

WILDERNESS TRAIL GRIPMASTER ™ BRAKE PAD

The Gripmaster ™ Brake Pad solves brake squeal, smooths rim irregularities, removes surface slickness, and is most effective in wet braking conditions. The pad continually cleans the rim of rubber, oil, and waxy build-ups responsible for brake noise. Competition proven for wet weather riding. Replacement pads available.

WILDERNESS TRAIL BIKES FIXED ANGLE SEATPOSTS

Fixed angle seatposts are provided on a custom basis to the end user only. The buyer must provide seat tube angle, saddle type, seatpost outside diameter, and saddle level preference. These seatposts have no saddle angle adjustment provision but may be altered by a skilled person using a broad, flat file. The clamping system uses material efficiently for a strong and light method of construction. The high grade alloy used for the post is especially resistant to bending while retaining light weight. Specifying the rider's weight will help us determine the degree of strength necessary. The brand of frame is useful to know as well, to help determine the correct diameter and length of the seatpost.

WILDERNESS TRAIL BIKES EXTENDED SEATPOSTS

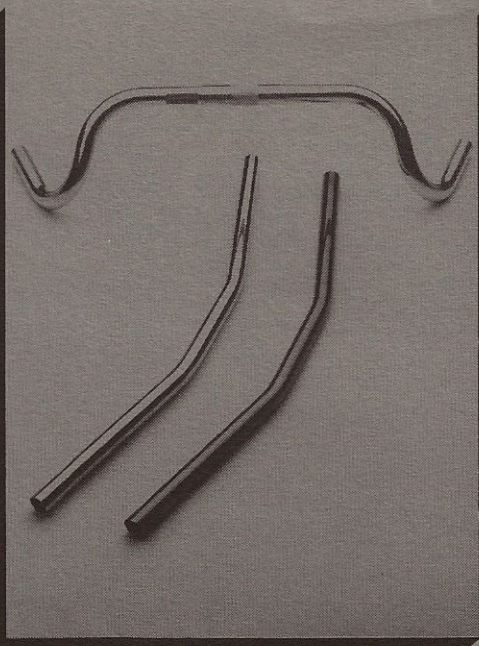
The same high-grade alloy as the fixed angle seatposts is used to graft the adjustable head of the customer's choice to the length of tubing desired. Specifying the seat tube angle and rider's weight will help us determine the necessary degree of strength.

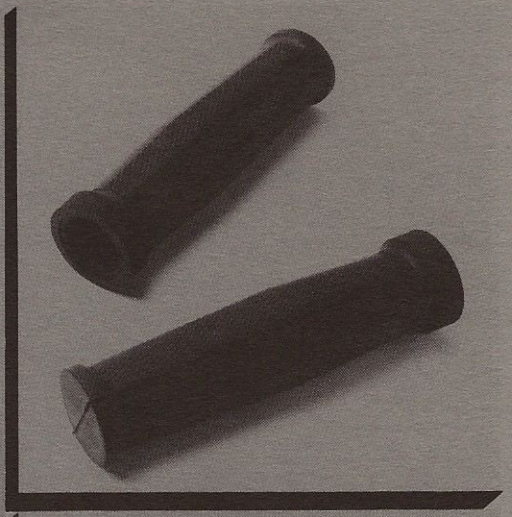
WILDERNESS TRAIL INTERNAL PUMPS

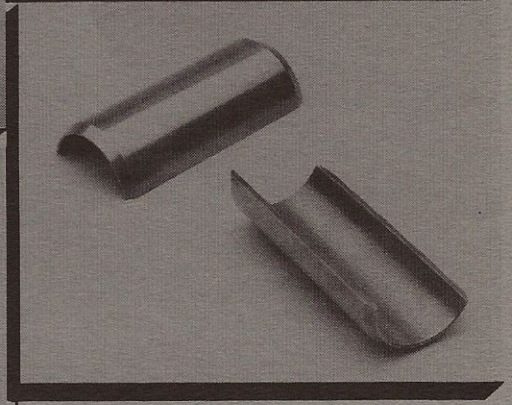
This is an original Wilderness Trail Bikes concept for mountain bikes. We modify a standard Zefal Solibloc pump for internal fit. The pump has a special plastic handle which fits inside SunTour XC seatposts or other seatposts with 7/8" or larger inside diameter. The pump is held handle-side up in the seatpost by friction. Internally mounted pumps stay clean, can't fall off, and retain an uncluttered appearance. Note: Smaller frames with water bottle bosses on the seat tube may not provide clearance for pump length. Raising and lowering the seat can damage the pump. Overall pump length is 18".

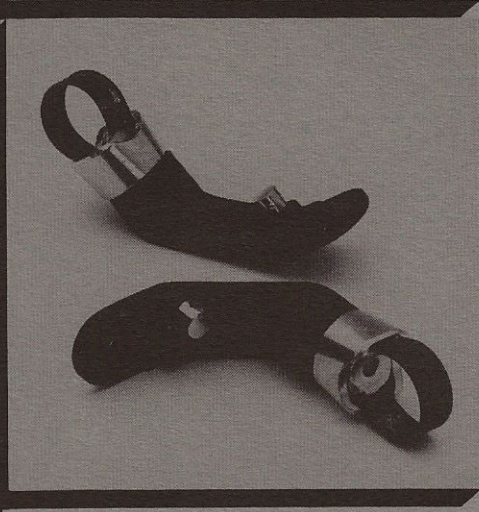
WILDERNESS TRAIL BIKES FLAT BARS

Wilderness Trail Bikes flat bars have always been made with substantially more sweep than any other flat handlebar. Our extensive experience has led us to this configuration. The greater sweep in our flat bar allows it to be rotated so the tips point downward a few degrees for added rider comfort and control. Another preference of ours has been chrome-moly rather than aluminum. With a limited diameter (7/8"), aluminum bars must weigh nearly as much as steel bars to get the same strength. We feel that the advantage of steel is that the handlebar will flex as much as an aluminum bar and will never snap. To achieve this absorption and retain strength, Wilderness Trail Bikes is using a handlebar tube with a thicker butted section, developed and sold by Ross Shafer of Salsa Cycles. The butting extends through the bend, leaving the straight section of .035 chrome-moly to absorb shock and reduce weight. If you prefer a flat bar with minimal bend (11°) the Salsa Bar is the one for you. If you require more sweep, Wilderness Trail Bikes rebends the Salsa Bar to 16° and will custom bend to suit rider preference.









WILDERNESS TRAIL DROP BAR

The Wilderness Trail Bikes drop bar specifically for rough terrain has less drop and reach than a standard road-bend handlebar. Drop is 5" and reach is 3". These bars offer a 40cm top and hood position with 25° of flare per side, starting at the brake lever position. The overall width is just under 24". The material is a better aluminum alloy than conventional drop bars, it is thicker for greater strength and safety, and is heat treated for super durability.. This bar combines the best attributes of both flat bars and drop bars. The advantages are multiple hand positions for extended mileage comfort and better anatomical alignment for handling in the power and braking position. They are comfortable and safe at speed.

WILDERNESS TRAIL BIKES SIS SHIFTER MOUNTS

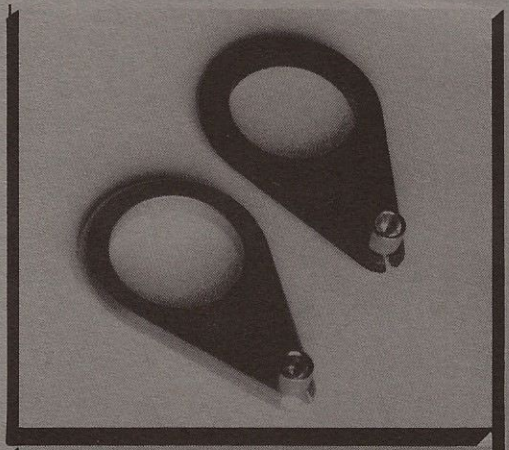
Wilderness Trail Bikes has designed a mount for Shimano Deore or Deore XT mountain bike thumb shifters on drop bars. Designed around the Wilderness Trail Bikes RM-2 off-road drop bar, it provides easy shifter access in adverse conditions. The mount attaches to the handlebar just above the brake lever and positions the shifter inside of your grip where it may be actuated without unwrapping your hand from the bar. Downshifting is possible even while braking. The Wilderness Trail Bikes Drop Bar and Shifter combination makes drops a viable combination for technical riding.

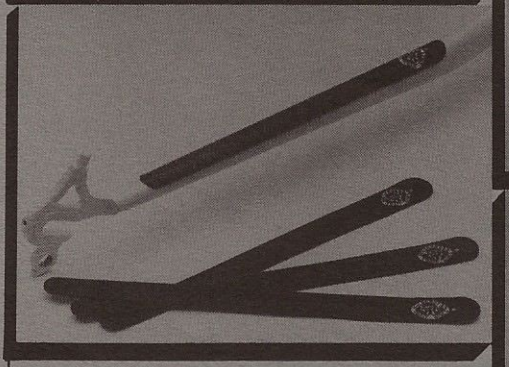
WILDERNESS TRAIL HANDLEBAR GRIPS

Magura ergonomic rubber grips have a bulge in the center of the grip to fit your hand. Wilderness Trail Bikes radiuses the flange down for easier access to the shifters. They are tough and comfortable. Use handlebar endplugs to prevent the handlebar from punching a hole in the end of the grip if the bike is dropped. These grips last.

WILDERNESS TRAIL HANDLEBAR SHIMS

A 1.030" OD x .875" ID x 2-plus" length shim must be used to fit a 7/8" flat bar to a Wilderness Trail Bikes stem as well as with other stems using a 26.0mm (Italian standard) bore. These aluminum shims have tapered edges on either side and extra length to help relieve the stress where the handlebar and stem meet.



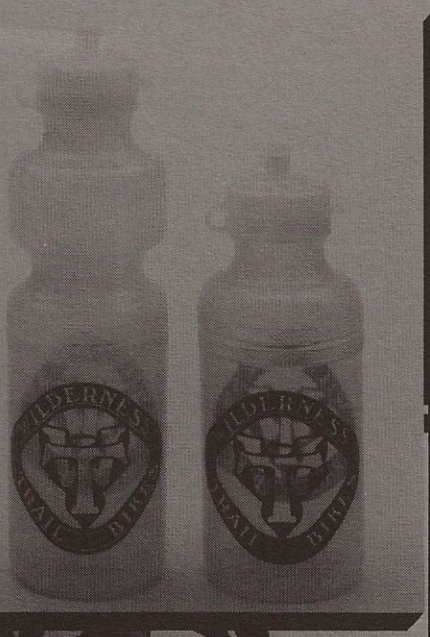


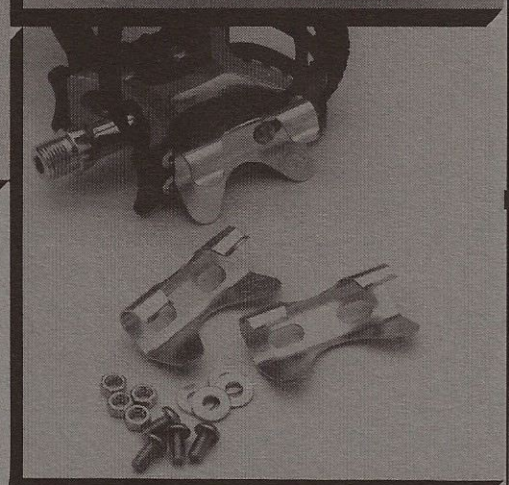
WILDERNESS TRAIL ALUMINUM CABLE HANGER

Our thick aluminum cable hanger provides a solid stop for the front brake cable housing and, therefore, a more precise feel for the front brake. Cheaper imitaitions are made3 out of cast aluminum, which is weaker and more flexible. The WTB piece is available in black or silver and beautifully machined with radiused edges from 3/16" high strength aluminum plate. The Wilderness Trail Bikes cable hanger clamps between top nut and threaded headset cup, so measure to make sure your fork steerer tube is headset stack height plus 3/16" for hanger.

WILDERNESS TRAIL CHAINSTAY PROTECTORS

Extra thick, energy absorbing, durable rubber with adhesive backing is cut 10" x .9" to .6" tapered for maximum protection and noise dampening. Chainstay should be clean and dry before application. Heat chainstay protector in the sun for best results.



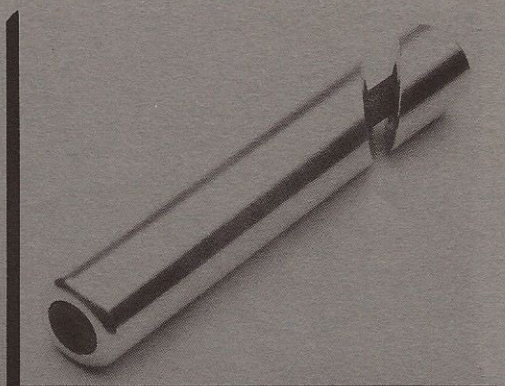


WILDERNESS TRAIL WATER BOTTLES

Large (28 oz.) or small (21 oz.) translucent Specialized water bottles printed with our popular Wilderness Trail Bikes logo in black on two sides. A must for the equipped rider. Buy extras.

WILDERNESS TRAIL TOE FLIPS ™

Here's another original Wilderness Trail Bikes design: a plated spring steel device shaped to provide a purchase for a quick, easy flip of the pedal, allowing fast insertion of the foot in the toe clip. A real advantage where dismounting and remounting are frequent. Toe Flips are superior to stock kick tabs due to the carefully designed shape which provides a ramp for easier entry.



WILDERNESS TRAIL BIKES STUBBY EXPANDERS

Our stubby expanders facilitate mounting of a clamp-on stem without a permanent bushing fixed in the steerer. The stubby expander is bolted into the steerer leaving 1.5" to 2.0" of 7/8" shank to clamp the stem to.

SHORT SLEEVED WT-SHIRTS

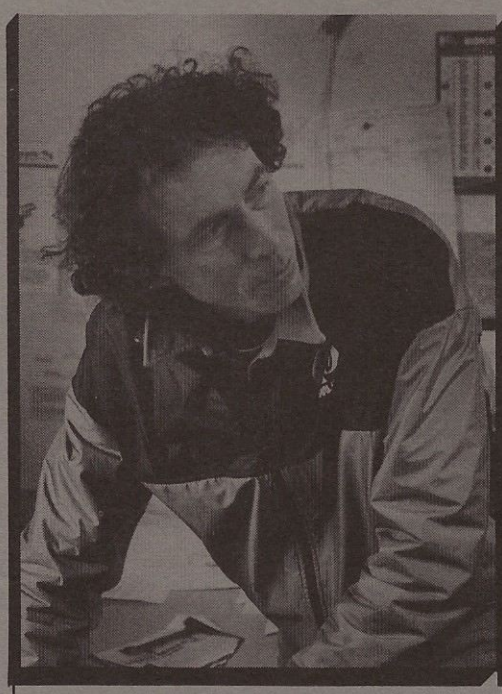
Our shirt and ink colors vary to keep up with the latest trends. Top quality 100% cotton Hanes "Beefy-T" or Russell "Jerzees" with our new popular rainbow colored logos. A large Wilderness Trail Bikes logo on back and small logo over heart on front. New or slightly different designs are always in the works, so please ask.

LONG SLEEVED WT-SHIRTS

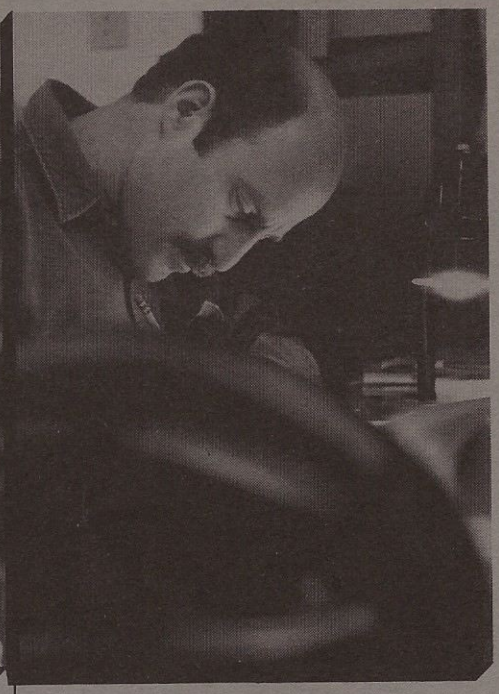
We use top quality 100% cotton Hanes "Beefy-T" shirts in popular colors, with our new rainbow colored logo. Sleeves have small logo with Ground Control tread pattern running down from shoulder to cuff and large logo on front and back.

WILDERNESS TRAIL SWEATSHIRTS

Sweatshirts from Hanes and Russell are the finest quality available. Our brand new rainbow colored logo is screened over the heart and a large logo covers the back. The sweatshirt has a hood and kangaroo pocket.







CHARLIE CUNNINGHAM

In the late 60's and early 70's Charlie Cunningham honed his bicycle skills and developed an appreciation for the needs of the off-road cyclist while riding his modified skinny tire bicycles on the trails of Mount Tamalpais. He built the first aluminum mountain bike in 1979 when aluminum rims and lightweight tires became available. The 23 1/2 pound bike was remarkably advanced for its time, incorporating many design features which have since been, or are now being adopted as industry standards; such as unpainted aluminum frames, 17" chainstays and 41 5/8" wheelbase, sloping top-tube, 136 mm rear dropout spacing, extra wide 115 mm front hub, large diameter seattube and post, 87 mm bottom bracket shell with cartridge bearings, toe clips, and high strength studs which later became the model for today's cam and U-brake mountings. This original bike by Charlie Cunningham is now restored and on display in the Mountain Bike Hall of Fame Museum in Crested Butte, Colorado. Charlie won the Norba Veterans National Championship in 1984. He builds a limited number of custom bicycles each year.

MARK SLATE

Mark Slate became interested in things mechanical at a young age. Although motors were a focus for much of his early years, the inspiration received from "bomber" rides replaced the motorhead mentality. Through mutual friends, Mark met Erik Koski, a major force in bicycle innovation, and learned about specs and mechanics. Mark was already familiar with many of the Mount Tamalpais fire roads from riding Schwinn "Ten-Speeds" before acquiring his first "Cruiser". From his first off-roader with black-wall Carlisle tires on steel rims, through virtually every technical trend, Mark has updated and modified his equipment. These ongoing improvements have given him a chance to consider technical progress and what it means to the experience of high performance trail riding. His working association with other pioneers in the industry has been his inspiration. Advancements in function have been his focus.

STEVE POTTS

From combing the dumps for old bicycles as a kid, to a professional motorcycle racing career, Steve has spent most of his life on two wheels. In 1980 a bicycle trip to New Zealand and Australia with Joe Breeze and that turned Steve's life around. Upon returning he sold his home, quit his job, and started making bicycles and components in a rented two-car garage. It was from this garage that Steve teamed up with Mark Slate and Charlie Cunningham. Their different skills complemented each other, so forming the company Wilderness Trail Bikes was a natural process. Steve builds approximately sixty bicycles a year, and his goal is to build the finest complete bicycles in the world. Working in his shop, and building and riding these bikes is what fuels Steve's inspiration for new ideas.

Charlie, Steve, and Mark, as Wilderness Trail Bikes, Inc., are still working on ideas, and have dedicated their lives to the bicycle as the perfect tool for right living. They plan to continue designing and producing top quality off-road components far into the future.

WILDERNESS TRAIL BIKES, INC. 134 REDWOOD AVE. CORTE MADERA, CA 94925 (415) 924-9632 FAX: (415) 924-9640