GROVE INNOVATIONS™

441 West College Avenue, State College, PA 16801



ASSAULT

This classic high performance mountain frame is hand built with aircraft 4130 Cro-moly tubing custom cut to Innovations' specs. Responsive ride and perfect geometry let the Assault dominate even the most demanding race course. You can see the flawless craftsmanship, attention to detail and superior design in every Assault we build. Frameset includes: Assault Fork, HotHead, Custom shoulder strap and two bottle cages painted to match.





GROVE X

Mountain innovation at its best! Ultra clean lines form this racing frame designed around a single spine tube! Oversize Aircraft 4130 Cro-moly tubing provides increased torsional stiffness over conventional frame designs. Elimination of a "top tube" give plenty of stand over clearance. Tighter triangulation puts more power to the ground for faster acceleration. Frameset includes: Assault Fork, HotHead and two bottle cages painted to match.

HARDCORE

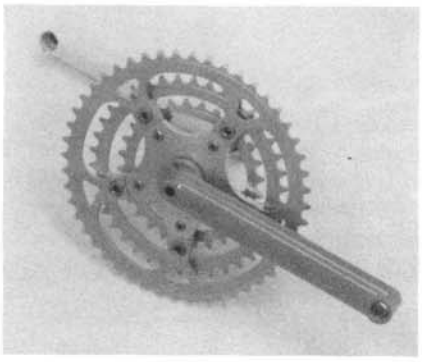
Designed for the radical rider who demands the strongest equipment. Overbuilt where others fail, the Hardcore thrives on abuse. Creative use of oversized 4130 tubing, ovalized at all weld surfaces for maximum strength. A 13.5" bottom bracket lets you cruise over the rough stuff, and the straight blade Hardcore Fork goes where you point it. For those who aspire to leap tall buildings in a single bound, the Hardcore delivers with confidence and style. Frameset includes: Hardcore Fork, HammerHead, custom shoulder strap and two bottle cages painted to match.





2-B-1

A performance mountain tandem designed for rigorous off road demands. The spine tube design of the 2-B-1 is torsionally stiff for out-of-the-saddle attacks that simply cannot be performed on a regular tandem. Only the 2-B-1 has an independently adjustable frame mounted stokers stem. The Grove Innovations 2-B-1 is a lifelong purchase that never gets old! Frameset includes: Assault Fork, HammerHead, stokers stem and Control Bar, four bottle cages painted to match.



Bolt-on performance that lets any cyclist feel the stiffness and power a cro-moly crankset provides! Available in 175, 177.5 and 180. Custom lengths and paintwork also available.

weight: 980 gms
Complete with 28-38-48 chain rings.
(Deore XT weights 1025 gms)

HOT RODS

The Grove Innovations Crankset! Everyone talks about frame flex and rim weight corresponding to acceleration. These have their place, but think about your crankarms. Crankarm flex robs you of power! We have always been mildly annoyed with the conventional design of a 3-piece crank. They wear out prematurely, take too much maintenance and their guts seem to be virtual magnets for mud. So in true Innovations style we set out to solve the problem. And in redesigning the crank, we ended up redesigning the B.B. also. We like it, and we think it's the best ever built. Here's what we came up with: Hot Rods are a 2-piece crankarm hand built from heat treated 4130 Cro-moly. A polygon shaped spindle securely attaches to left arm with one bolt. A separate alloy spider holds either two or three chain rings. The Hot Rods and its bottom bracket are an integral unit. Four cartridge bearings with four dust seals house 96 eighth inch ball bearings. Cartridge bearings allow the lowest possible maintenance. These four cartridges are flanked by four rubber O-rings that seal both internally and externally. These spin on an oversize 3/4 inch heat treated spindle, infinitely adjustable for perfect chain alignment. Feeling strong today? The unit has a load rating of 16,000 lbs. up to 5400 rpm, unbelievably stronger than a conventional bracket. We consider this to redefine the concept of bulletproof!

HAMMERHEAD

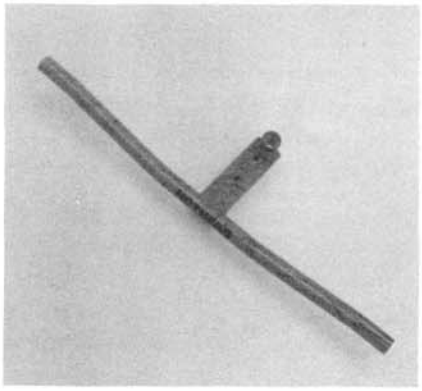
An ultra clean one-piece bar and stem combo. Flat oval tubing in stem section offers superior lateral stiffness when climbing. Anatomical bend under palm provides more control with less fatigue. Tig welded and hand brazed from 4130 Cro-moly tubing.

weight: 665 gms

MOUNTAIN STEM

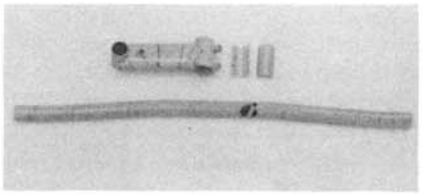
This lightweight heat treated stem is hand built from the same stock as our Hothead, but with a 2-bolt clamp design for use with after-market handlebars.

weight: 325 gms



STANDARD SIZES

10° - 135 mm	30° - 135 mm
10° - 160 mm	30° - 160 mm



HOTHEAD

The high performance version of our popular Hammerhead. Built with thin walled 4130 Aircraft Cro-mo ly. Heat treated for additional strength, with a weight savings of 125 grams. This is the racers' choice!

weight: 540 gms

CONTROL BAR

The Grove Innovations design handlebar with an anatomical correct bend under palm.

weight: 369 gms

PRO BAR

A thin walled, heat treated lightweight version of the Control Bar.

weight: 265 gms

REACTOR CORE

A cartridge sealed fully adjustable bottom bracket for use with conventional crankarms. Not quite as over built as our Hot Rods, but the concept is the same. The reactor core uses 2 cartridge bearings on a standard diameter spindle. Available in 2 sizes for either Mountain or Road bikes.

HARDCORE FORK

A serious straight blade design, the Hardcore Fork is the only choice for the rider who prefers to be in the air. Stiffer blades offer precise feedback from radical terrain. When you've bent the rest, try the best! Hardcore Forks are also availalbe in custom colors at an additional cost.

ASSAULT FORK

Our racing fork is available separately. Hand built from 4130 Cro-moly tubing, the Assault Fork uses traditional curved blades for increased shock absorption. Flawless in both performance and appearance! Assault Forks are also available in custom colors at an additional cost.

SOFT GOODS

Our T-shirt designs are in a constant state of evolution. The favorites are always available, like our original Hardcore T, and the ever popular and obnoxious Warning T. Also we have the Grove Innovations University, Custom Paint Splash, and classic Logo T. Grove Innovations also offers quality shorts and jerseys with our logo work on 'em. No minimum order quantities or dollar amount bogusness. Call us and we'll tell you what's hot that month! Some of our stuff is made in very small quantities, some is in larger lots. Some disappear overnight, some lasts a couple weeks. Ya gotta strike fast!

When the need for Speed Overcomes the fear of Death

INNOVATIONS™

WATER BOTTLES

STICKERS

T-SHIRTS

SWEATSHIRTS

CYCLING SHORTS

RACING JERSEYS

(anything but suits & ties!)

You choose 'em! **1991 COLORS** We paints 'em!

Purple Passion:	*A deep metallic purple that looks wet enough to drink!*
Wineberry:	*A succulent, sensual, full bodied deep maroon with a touch of metal flake!*
Emerald Green:	*A radiant dark green that sparkles like a fine jewel!*
3-Radiant Fade:	*Beautiful purple passion, silver platinum to emerald green fade!*
Tom's Teal:	*The richest, classiest blue-green electric teal only Tom could mix up!*
Clown:	*An off white base with fluorescent polka dots and a thin black splatter!*
Neon Solar System:	*Black gloss base with exploding neon dots - no two alike!*
Screaming Warning Orange:	*A color so outrageously bright it is not naturally found anywhere in the universe!*
Psycho Neon:	*A crazy concoction of multi-neon fades covered with a lovely black splatter.*
Glowing Nuclear Lizard:	*This one is for all the really sick people: it actually glows in the dark. A double day-glow pink and yellow fade with lizard skin rear triangle and fork blades. And yes, again, it does glow in the dark. Think you can handle it?*

CUSTOM PAINTWORK

Every year some of our most difficult decisions are concerning which incredible paintworks to offer as a stock color option! When you can paint everything under the sun it is virtually impossible to even begin listing them all. Just look around! Have a crazy idea! Call us. We can custom paint your old frame, your new frame, your hubset, your pedal cages ... get the idea? And we can also do repair work on your crashed bike ... or maybe you want to change the cable braze-ons ... whatever your idea is, call us. We'll quote you a price and turn around time immediately!

SPECIFICATIONS

all measurements based on 19" frame	ASSAULT	GROVE X	HARDCORE	2-B-1
HEAD TUBE ANGLE	70	70	72.5	70
SEAT TUBE ANGLE	72.5	72.5	73	70
TOP TUBE LENGTH	22.875	E: 22.875	23.50	22.875
CHAIN STAY LENGTH	16.75	16.75	16.75	17.25
BB HEIGHT (ground to center)	12.0	12.0	13.5	12.0
WHEEL BASE	41.875	41.875	42.375	69.0
FORK RAKE	1.75	1.75	1.75	2.0
STAND OVER HEIGHT	31.0	26.0	32.5	31.0
SIZES (center to center)	15,16,17,18,19,20	15, 17, 19	16, 17, 18, 19	20x18 19x19 19x15 18x17
WEIGHT	5.2 lb.	5.5 lb.	6.2 lb.	14.2 lb.