KING OF THE LINKS
AMP SUSPENSION FORK

• The AMP fork is the most unique of all the suspension forks on the market. Engineered by Horst Leitner, the world's top motorcycle designer, the AMP fork was originally developed as a concept fork for motocross racing. Its adaptation from 12-inch-travel motorcycle fork to two-inch-travel mountain bike fork was a natural progression. The AMP parallelogram fork has been in testing for two years, and has seen more than a few miles on the NORBA circuit under the able hands of Max Jones, David Turner, Martha Kennedy and the '92 Mongoose team.

The AMP fork has been undergoing constant change and development. During our three months of testing, AMP Research produced four different upgraded versions. It is now ready for sale.

YOUR FORK OF FORKS

A trick, machined, aluminum fork crown forms the heart and soul of the AMP unit. The machined crown clamps to the steerer tube, locates the four pivot points for the parallel links, contains the internal spring and houses the attachment points for the hydraulic damper.

One-inch-diameter straight-blade fork legs are TIG-welded into a chromoly rectangular crossbrace crown. The welded crown holds the companion linkage pivots for the aluminum crown and supports the cantilever cable stop. Complicated as it may sound, the AMP fork is amazingly compact, easy to understand and light (our test unit weighed in at 2 lb., 10 oz.—that's light!)

Lightest: The AMP fork is a coil spring-supported, parallelogram, linkage fork that uses both a hydraulic shock and urethane bumper. It weighs 2 lb., 10 oz. The machined aluminum linkage arcs the straight-blade chromoly fork upwards where the spring, shock and bumper control the 2" of travel.

One of the coolest features of the AMP fork is the thru-shaft shock absorber. This tiny four-ounce aluminum shock is positioned horizontally on the left side of the fork between the aluminum crown and fork blades. Compressing the fork pulls the hard-anodized aluminum damper rod, providing compression damping in one direction and rebound damping on its return stroke. The thru-shaft design allows the damping piston (inside the shock) to run in an equalized cavity of oil, thus preventing fade or eliminating the need for a nitrogen chamber. Thru-shaft technology is perfect for bicycle applications because it achieves credible damping without increased complexity.

WHAT WE LIKED & DIDN'T LIKE

The AMP fork's unique appearance prejudices most test riders' expectations before they even ride it. Each test rider scrutinized the AMP fork carefully, banging curbs, bunnyhopping and slamming on the brakes before setting out on the trail. The logic behind this behavior was that the testers felt that a fork that looked so different ought to feel different. The surprise was that the AMP fork didn't feel different, but it worked really well.

One great aspect of linkage forks is that they have less "stiction" (static friction) than a telescopic fork. Unencumbered with large seals, bearing surfaces or swept areas, linkage systems are free to follow the slightest ripples. The AMP fork holds true to this axiom and backs it up with an equal ability to absorb not only the smallest bumps, but also the largest. Designer Horst Leitner, the man behind the Mongoose and Specialized suspension bikes, exploited the lack of stiction by setting up the geometry of the linkage pivots to cause the wheel to travel at a slightly lower angle than a telescopic unit, increasing the fork's ability to soak up square-edged bumps (as with logs or rocks).

Each of the pivot locations runs on replaceable self-lubricating bushings and a hard-anodized aluminum shaft. There are no nuts on the AMP forks. All the parts are attached with simple spring circlips. Some test riders complained that, as the bearing surfaces wore out, there was some backlash apparent in the system. When the brake was locked the bicycle could be rocked slightly back and forth. This was irritating, but the fork remained very stiff laterally.

With all the movement contained in the milled aluminum crown, the fork blades are subject to much less flex than telescopic ones.

What holds the AMP fork up? Hidden in between the wishbone-shaped linkages is an Eibach spring. Eibach provides the springs for the Ferrari Formula One team, and built special 1000-pound springs for the AMP fork. Preload is accomplished by turning a screw beneath the fork crown. Since the AMP's linkage has a purposely designed "falling rate," a short elastomer bumper is inserted inside the coil spring to act as a supplementary spring for hard impacts and as a bottom-out stop.

Each and every new version of the AMP fork that we tested got better. Early versions came with a very stiff spring rate that ruined the fork's small bump efficiency, but held it up over harsh landings. Some test riders preferred a lighter spring rate because it absorbed the majority of trail debris, although it would bottom over big bumps. When we complained, AMP supplied us with an upgraded thru-shaft shock, with less compression damping and more rebound, and the forks began to smooth out at the extremes. Two weeks later they added an elastomer bumper inside the spring that allowed every test rider to run the softer spring rate without losing the supple feel on smooth terrain or the stiffness to take major impacts.

The *MBA* test riders would rate the newest AMP fork as "very good." The latest version addresses most of the fork's early problems (bottoming, tire clearance and not enough rebound damping). The AMP fork has a coil spring to hold it up (springs don't go flat or wear out), hydraulic damping (to avoid the pogo stick feeling of most bumper forks), a tuned-length elastomer bumper to kick in additional spring rate late in the stroke (to lessen bottoming without destroying suppleness) and the ride can be adjusted on the trail by changing the spring preload, or in the workshop by swapping spring rates or elastomer bumper lengths. Weight is where the AMP fork really shines. It is currently the lightest of the two-inch-travel forks we have tested, and while the AMP fork has only been available to selected racers over the past two years, it can now be found in much wider supply. For more info contact AMP Research at (714) 497-7525. Retail price is $390. •