

HARD-HITTING, BIG-HIT BUYER'S GUIDE
OVER 50 MODELS: PRICES, SPECS, PHOTOS

MOUNTAIN BIKE

ACTION WWW.MBACTION.COM

MAY 2010

THE EMPIRE STRIKES BACK:
CAST ALLOY FRAME—
WORTH THE WEIGHT?

MUST-RIDE TRAILS:
FLORIDA
COLORADO
OHIO



EMPIRE CYCLES AP-1R



TITUS FTM



INTENSE 951



SPECIALIZED DEMO 8



TREK FUEL EX



FOES RS7

Comag £3.75

MOUNTAIN BIKE
ACTION USA MAY 10



9 770895 846090
www.magazinecafe.co.uk

50
KES
MAKE
DROOL

CCC 022834

MOUNTAIN BIKE ACTION

DOWNHILL OUTCAST

The Empire
Cycles AP-1R



Since we test about a half-dozen bikes a month, we can become a little jaded about opening a new bike box. That was not the case, however, when a box arrived at the MBA headquarters from the UK. Inside was a downhill bike that looked part battleship anchor and part engine block. It was, of course, Empire Cycles' AP-1R.

We kid about the unique appearance of the Empire AP-1R, but its one-of-a-kind design was certainly a part of the approach from its inception.

"From the outset of the project, Empire did not wish to manufacture traditionally fabricated structures, as there are so many [bikes] in the world already," explains AP-1R designer Chris Williams. "My background is in the automotive and motorcycle industries, so my thinking was, how would Ford, KTM or Fiat tackle this project? HSC (High Strength Casting) is now commonplace on many off-road motorcycles; KTM, in particular, has spent lots of time and money developing HSC swingarms for their bikes. I figured it would be possible to miniaturize the swingarm for a mountain bike. And then I figured, why not the whole bike?"

The Empire downhill bike's rare look and construction aren't purely to be different from the competition. According to Chris, there are good reasons for using a cast alloy for a mountain bike frame. "It's possible to achieve more styling of components, as they are molded and have a very high structural strength," says Williams. "This also allows the frame to be manufactured in the UK. There is no weld distortion, as there are no welds on the entire frame, and the final operation is machining the frame so all of the pieces fit together perfectly."

Prior to 2010, the Empire AP-1R was not available in the United States; however, Hope Technology U.S.A. now distributes it out of Texas.

WHO IS IT MADE FOR?

The Empire AP-1R is made for downhill racing. Of course, it's capable of handling whatever bike parks have to offer, but its component spec is selected with the dedicated



One-of-kind: The AP-1R frame uses a single-pivot suspension and Cane Creek Double Barrel shock.

competitor in mind—a rider hip to the latest technologies and savvy enough to appreciate the features and tune them. The AP-1R is also made for average-sized riders (between 5-feet-7 and 5-feet-11), as the frame is only made in medium.

WHAT IS IT MADE FROM?

Empire Cycles offers three different build kits for the AP-1R, all of which share the same frame. Prices range from \$4200 to \$8600, depending on which shock, fork and component combination a rider chooses. The three-piece, precision, sand construction, single-pivot AP-1R frame has a remarkable number of interesting features, such as a moto-style rear brake carrier, a custom chain torque idler roller and chainguide, ISCG '05 mounts, a three-position rear axle fitting with an adjustable wheelbase and travel between 8.3 and 8.7 inches, an 83-millimeter-wide bottom bracket shell, a 1.5-inch head tube and stainless steel fasteners throughout. Although the AP-1R has 150-millimeter-wide rear hub spacing, it uses a 135-millimeter rear wheel to allow for the 15-millimeter-wide rear brake carrier that slides onto the rear axle between the rear hub and inside the left swingarm.

WHICH COMPONENTS STAND OUT?

Empire does a superb job of spec'ing the AP-1R race bike. The robust Fox Shox 40 RC2 handles the front suspension duties, and the frame is equipped with Cane Creek's innovative Double Barrel shock with titanium spring. The Double Barrel has dizzying tuning capabilities, which we will touch on in a moment.

Hope Technology manufactures a number of high-quality components, including disc brakes, hubs, lights, headsets and more. Our AP-1R test bike is kitted with tons of high-end Hope goodies, like eye-catching Tech V2 disc brakes with eight-inch rotors, Hope Pro III hubs laced to Mavic 721 rims, and their integrated direct-mount stem/Fox 40 flat crown which has to be seen in person to be fully appreciated. Empire couldn't go wrong with the versatile and widely popular 2.5-inch Maxxis Minion DHF tires mounted front and rear.

In addition to the frame construction, other motocross-inspired bits abound on the AP-1R, like the high-quality custom graphics on both the

EMPIRE



Trick shot: The Empire's Cane Creek Double Barrel shock has several tuning adjustments. The trick is to feel each change of the compression or rebound circuit, but you have to be riding the bike at speed, as the tweaks aren't felt just pushing on the shock.

frame and fork. The gray AP-1R frame is slightly rough to the touch from the nature of sand casting, and the custom graphics accentuate the frame's meandering lines.

Empire spec'd the AP-1R with the hardcore racer in mind. Therefore, to save weight they use a Shimano XTR shifter to communicate with the compact and reliable Shimano Saint rear derailleur. This is a bike you can stare at repeatedly, each time spotting something else trick to keep your attention, like the Renthal 36-tooth chainring.

HOW DOES IT PERFORM?

Ergonomics: The AP-1 frame screams high-performance, and the AP-1R build is dedicated to achieving it. The top tube measures 21 inches long, but it feels roomier. The 28.5-inch-wide Sunline V One handlebar is right on the money for a comfortable cockpit that invites aggressive riding. The AP-1R also has a remarkably low 28-inch standover height for a downhill bike.

Pedaling: The 45-pound AP-1R does a decent job of hiding its weight, and it's easier to get up to speed (thanks to gravity) than one would expect of a bike about five pounds heavier than other comparable bikes within the category. The heft is mainly felt when accelerating after a tight corner.

The Cane Creek Double Barrel shock has a variety of tuning options, including low-speed compression. This adjustment helped pedaling performance on relatively tame trails, but on legit downhill courses we backed the low-speed compression off nearly entirely, because pedaling the single-pivot AP-1R creates minimal (for a downhill bike) unwanted suspension movement.

In addition to the tuning features of the Cane Creek shock, the AP-1R uses an idler pulley above the chainring. This device improves pedaling performance for single-pivot bikes with a high pivot location by reducing chain growth and pedal feedback.

Cornering: The first characteristic of the AP-1R that jumped out at us was its well-thought-out geometry. Of the frame's three wheelbase/travel settings, we preferred the middle setting, which provided a 17.25-inch long chainstay and 8.5 inches of travel. We found this was the most versatile wheelbase and travel setting, ideal for nearly every type of downhill course we rode. Only on extremely high-speed or rough trails would we consider extending the chainstays to 17.75 inches for 8.7 inches of travel. The shortest 17-inch chainstay setting, offering 8.3 inches of travel, is also suitable for most downhill terrain and would be preferred by riders looking for a snappier reacting setup.



The top tube's ground-down "seam" from where the sand-casting molds come together.



The Hope Fox 40 top crown.



Good choice: We loved the Empire's component spec. The 28.5-inch-wide Sunline handlebar, Maxxis Minion DHF tires and Fox 40 RC2 fork are race-proven.

EMPIRE

The 14-inch-high bottom bracket allowed enough room to lean the AP-1R over and quickly get on the gas to the 170-millimeter Saint cranks.

Descending: Setting up the Cane Creek Double Barrel shock is tricky, because a majority of the tuning changes you make aren't noticeable until you're on the bike and riding at speed. You can't feel the adjustment just bouncing on the bike in your garage. The Double Barrel practically requires a chairlift to tune it so you can quickly and easily compare tuning adjustments on back-to-back runs.

Since the AP-1R is a good pedaling bike, we opted for minimal low-speed compression and adjusted the high-speed settings based on how high-speed and rough our racecourses were. For rougher courses, we'd add a turn or two to the high-speed knob, which is easily accessible underneath the frame's top tube.

The front of the AP-1R frame is literally machined to fit the swingarm, creating one of the stiffest and quietest downhill bikes we've ridden. Aboard the AP-1R, the rider feels a unique sensation as the frame construction practically damps trail vibrations. The feeling is slightly distracting at first, because you're used to the traditional sounds and vibrations of aluminum frame tubing.

Braking: Reviews of single-pivot frames often emphasize the effect of braking forces on the rear suspension. In reality, suspension performance is affected by more than just rear brake input. A rider's body position and skill level are important factors. If you strangle the grip and rear brake lever on a rocky descent, the rear suspension will not perform to its maximum capability. Therefore, braking before technical sections and letting the suspension do its thing is the best way to clear gnarly terrain—no matter which suspension design is being used.

The Hope V2 hydraulic disc brakes with braided hoses and eight-inch rotors are impressive, not only because of their sleek, machined finish, but also because of the power output. The levers are easily adjustable to your desired reach position, and the unique, machined levers fit comfortably in the crux of your index finger.

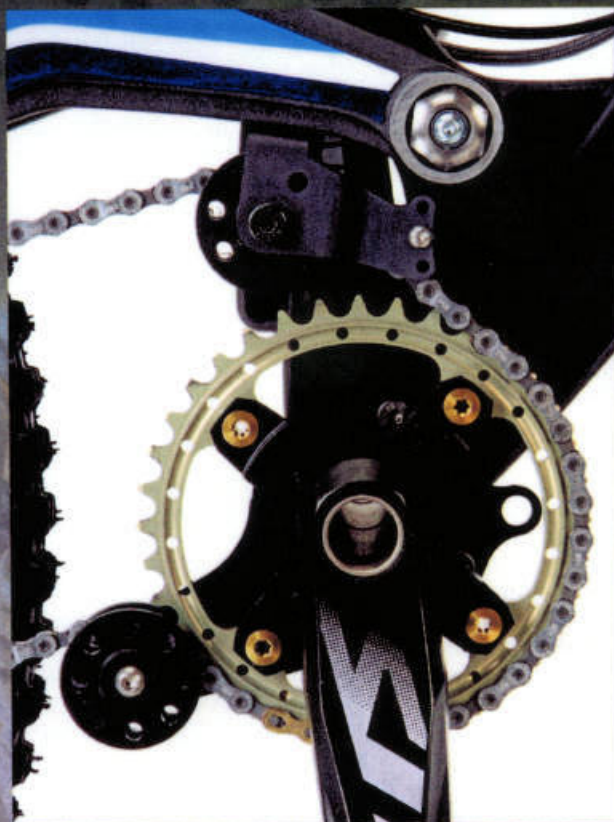
TRICKS, UPGRADES OR TIPS?

The AP-1R has more trick parts per inch than practically any bike we've reviewed in recent memory. But, not everyone will fit on it, as the cast alloy frame is only available in size medium. The rear wheel can be tedious to remove and install, because there are so many pieces (brake caliper, wheelbase guides and thru-axle) to line up properly.

BUYING ADVICE

If there is one segment of mountain biking continually pushing the envelope in performance and design parameters, it is downhill racing. The never-ending search for speed has contributed to many of the technologies our everyday trailbikes feature today. Are cast alloy frames the next big thing? Not likely. But we know one thing for sure: The Empire AP-1R test bike has dialed geometry for aggressive riding and handles high-speed technical terrain impressively well.

Empire offers three different build kits for the AP-1R frame at different price points, so perhaps we'll be seeing more cast alloy bikes on the mountain sooner than we think. And, according to AP-1R designer Chris Williams, they've already got a five-inch travel all-mountain bike in the works. □



An idler pulley helps the chain stay in line with the rear axle as the wheel moves through the travel.

EMPIRE AP-1R

Price	\$4800
Country of origin	Britain
Weight	45 pounds
Hotline	(936) 756 5004
Frame tested	Medium
Bottom bracket height	14"
Chainstay length	17-17.75"
Top tube length	21"
Head tube angle	65°
Seat tube angle	72°
Standover height	28"
Wheelbase	44.5-45.2"
Suspension travel	8" (front)
Suspension travel	8.3-8.7" (rear)
Frame material	Cast aluminum alloy
Fork	Fox Shox 40 RC2
Shock	Cane Creek Double Barrel
Rims	Mavic 721
Tires	Maxxis Minion DHF 2.5"
Hubs	Hope Pro III
Brakes	Hope Tech V2
Crankset	Shimano Saint
Shifters	Shimano XTR
Handlebar	Sunline V One (28.5" wide)
Front derailleur	Custom chainguide
Rear derailleur	Shimano Saint
Chainrings	Renthal 36T
Cassette	Shimano (11-25)
Tallest gear	22.27 feet (per crank rotation)
Lowest gear	9.8 feet (per crank rotation)
Pedals	Shimano DX platform