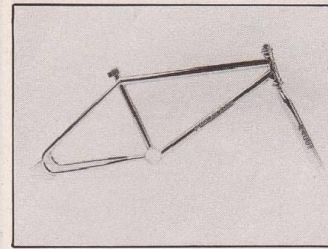




Race Inc.'s Mickey Lundy sat in for our photo session in the majestic hill country of Riverside, California.

THE RACE INC. RMK-2 RACE KIT.

Test by Bob Hadley



The Race Inc. RMK-2 race kit is a high-priced package. It includes an RM-2 frame, forks, handlebar, and seat post. Technical Editor Bob Hadley looks into the heart of the kit—the frame and forks—and finds nothing but quality. Is it worth the money?

Photos by John Ker

The RM-2's value is in its honed simplicity and strict dedication towards function. Of course, on top of that is the fact that it sets the standards of perfection in the entire bicycle business.

You can't see what you're paying for when you buy a Race Inc. RM-2. There seem to be no gimmicks or gadgets to justify the high price. It looks very ordinary. To be sure, the welds are clean and the design is functional, but other bikes have clean welds and functional designs also.

The Straight Facts

What do you pay for? Something very, very few in the business can offer: precision craftsmanship. And that is us speaking from experience, not quoting from some spec sheet published by Race Inc. Of the more than one dozen "high tech" racing frames that we have had on the test bench since we started the program last October, the Race Inc. came the closest to being absolutely true. For all practical purposes it was perfectly straight. It has simply never happened before!

Why hasn't it happened before? Exactly why does the RM-2 line up when others do not? Again, this all goes back to what you see: no gadgets, no gismos, but a high price tag. But wait! Race Inc. has a gimmick. So simple and obvious it's usually overlooked: perfection—the reward of precision craftsmanship.

Perfection, in a cycling frame, whether it's a multi-speed road tourer or a BMX bike, can only be achieved by one method: fixture welding. A fixture is a device that frame builders assemble the frame

tubes in. The tubes are clamped in place—"fixed"—so the welder can do his job without the tubes moving. Frame alignment starts at the fixture. If it is misaligned, weak, or poorly designed, no amount of proper welding techniques will save the frame from crookedness. Another cause of frame imperfections is improper production procedures. This is where the majority of frames get botched up.



Mickey lays it into a sandy bank at this month's no-longer-so-secret test site.

Where Others Fail

Most production frames are first "tack welded" in the fixture, then piled into a stack to be finish welded at another station. "Tack welded" means the welder simply puts a couple of little spot welds at each junction where one tube eventually gets welded to another. The "tack welds" hold everything in one piece until it is finish-welded later on. A tacked frame is very easy to finish weld. A welder simply lays it on a bench and flips it any which way he wants in order to get to, and weld around, all the corners. This method, however, creates a problem that is worse than those caused by a screwed-up fixture.

Naturally (if the fixture is straight), the tacked-up frame will be fine. But the instant the heat is applied to do the finish welding, forget it. Heli-arc welding involves intensely high temperatures. The physics of heat expansion takes over and everything starts to happen. As things heat up and cool down at different rates, an expansion/contraction war begins. It's a war that the frame loses because there is no fixture to hold it steady until it's cooled off. If the frame is held tightly in the fixture during the entire welding process the frame at least stands a fighting chance of being true.

There are other factors involved as well. The welder can help prevent some of the stress by simply knowing his stuff. Tubing wall thickness and diameter affect the amount of expansion and contraction at each weld. Unless the welder adjusts his operations to compensate, the frame can tighten up like a spring while it's held in the jaws of the fixture. When it's loosened, out jumps one preloaded spring: a crooked frame.

The Bastian Plan

So to achieve that almighty perfect frame alignment, the frame has to be 100% fixture welded by a competent technician, right? Well, that almost does it. But in addition, Race Inc. welders follow the Bastian Plan: they weld here, then there, then over there, so the tubes draw as evenly as possible during the expansion and contraction of the welding process. We named this process the Bastian Plan, after Bill Bastian, owner of Race Inc. Bill Bastian's name may not be a household word, but in industry

A bicycle frame has to be defective to the point of being visually obvious in order for it to affect performance significantly.



Synchronized drop-ins off a sand cliff. Mickey and Mike go for a difficult double path down dubious terrain.

circles he is one of the most highly regarded and deeply respected individuals. Many consider him to be the sharpest in the industry when it comes to manufacturing frames. After observing his Gardena, California plant in operation, you can't help but admit he definitely has his act together.

If fixture welding is so great, then why don't others do it? Because fixture welding kills your production time, and most factories are riding the tide of price competition. You simply can't produce low-cost frames by fixture welding. Perfection is sacrificed for economy; it's the same in every industry. It's a matter of what the consumer can afford, a Fiat or a

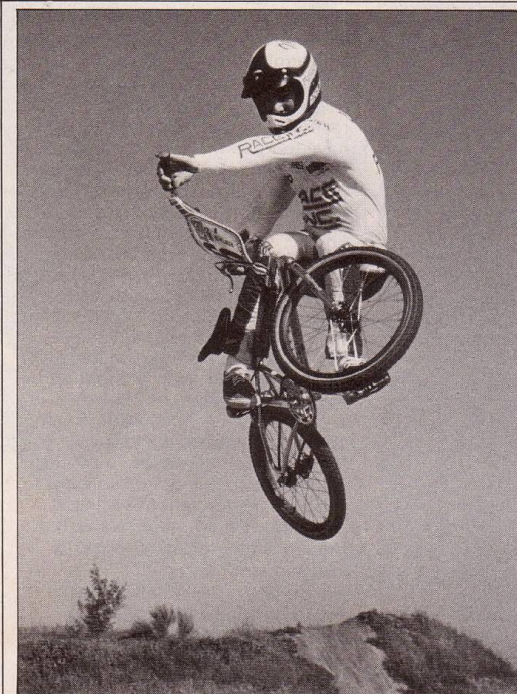
Ferrari. Now don't get us wrong—in no way is this a condemnation of the "tack-and-finish" method. It exists simply because the average consumer can't afford the high bucks of a Race Inc. Which brings us to the question: Is perfection necessary?

Too Perfect?

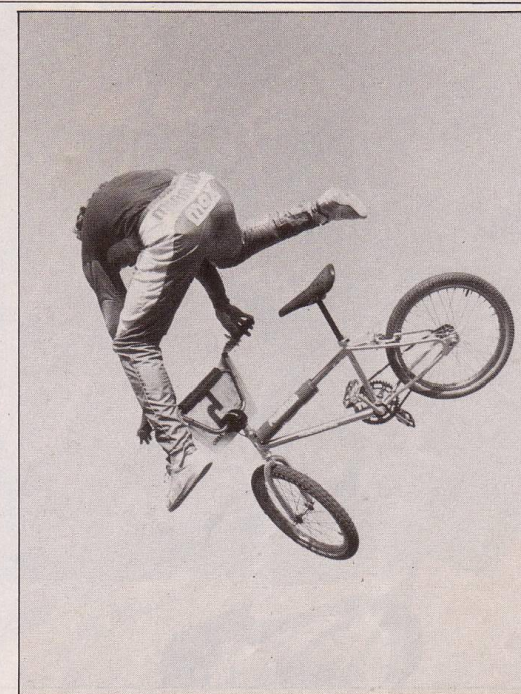
A tough question. A bicycle frame has to be defective to the point of being visually obvious in order for it to affect performance significantly. Rear wheel dish and axle placement can go a long way to help correct tracking error. Other than that, a few minor tweaks here and there are tolerable for the most part,

especially since most amateurs race at really low speeds (less than 20 mph), and the rider usually compensates for the bike's idiosyncrasies without even knowing it. Perfection, or the issue of perfection, becomes important at the upper echelon of the riding ranks, to those whose skills are of higher caliber. The RM-2 is for the experts, the Pros, and of course, anyone else who simply wants a perfect bike regardless of his skill (the perfectionist). For these elite few, substandard frame alignment means substandard quality and performance: poor chain alignment robs power, tracking error causes balance problems, and a twisted chassis affects cornering attitude and other handling traits.

In two cases on the RM-2 they have shown ingenuity, and uniqueness without being gimmicky.



Lundy is some jumper. His Race Inc. is used to all the thrashing he can dish out. An unusual head gusset helps give the frame its strength.



There is a fine line between control and abandon. Miranda abandons all control.

Dimensions

Weight: 24 pounds
Wheelbase: 36 1/4"
Head Angle: 71°
Seat Angle: 66°
Hanger Height: 11.8"
Hanger to Axle: 14.6"
Top Tube Height: 22.2"

Frame Specifications

Weight: 3 pounds 14 ounces.
Material/Construction: 100% Chrome-moly
Seat Post Diameter: 7/8"
Head Tube Style: Standard
Hanger Style: Standard

Fork Specifications

Weight: 1 pound 8 ounces
Material/Construction: 100% Chrome-moly/heat treated.
Height: 12"
Offset: 1.623

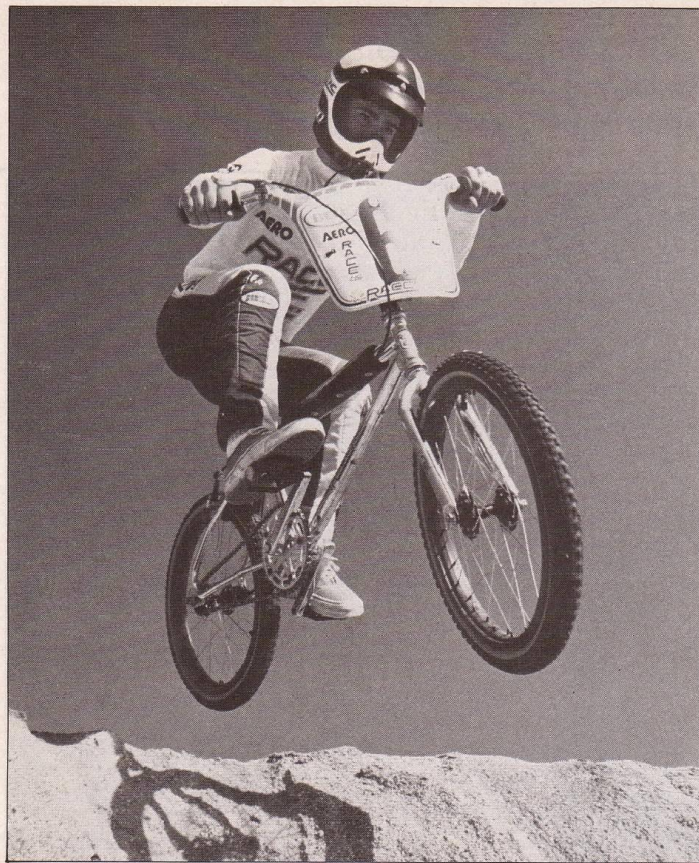
Sound Principles

Race Inc. takes a sound approach towards engineering on all levels of design. In two cases on the RM-2 they have shown ingenuity, and uniqueness without being gimmicky. Both cases pertain to the steering column. They are the swaged, contoured head tube and the head gusset. The head tube actually starts as a length of one-and-one-quarter-inch-diameter tubing. A swage spreads the ends to one-and-one-half inches in diameter for the bearing cups. Since the top and down frame tubes are one-and-one-quarter inches in diameter (same as the un-swaged portion of the head tube) the resulting miter joints are solidly wrapped half way around the head tube. This gives the frame tubes a much better "grip" on the head tube. As for the expanded ends on the head tube, they are very heavy

duty, and the tolerances for a standard headset are perfect.

As gussets on bicycles go, Race Inc.'s are somewhat unusual. The positioning is similar to that of Red Line's "little triangle" gussets, except Race Inc.'s are more like a small wedge welded between the lower crown of the head tube and the down tube. This type of gusset is a familiar sight on motorcycles and airframes. It might be worthwhile to note that the new Haro Freestyler frame, because of its unusual front triangle, relies heavily on a similar wedge-type gusset for much of its structural integrity. The RM-2's gusset may not play as large a role; but, nevertheless, it does substantially relieve the lower head area from carrying the burden of riding stresses.

The RM-2 features a number of Race Inc. designs that over the



Mickey favors the RF-2M centerline fork. We did, too. It's two ounces lighter than the leading-axle-style RF-M fork, and less subject to flex.

years have proven to be valid. The slotted brake anchor, for instance, allows adapting any caliper 890 mm or longer. Or take the keyholed seat-post slot in the seat mast. Rather than having a simple slit in the seat mast for the seat clamp to squeeze and fatigue, all the seat masts in Race Inc. frames have keyhole-shaped slots to prevent cracking.

Although the rear dropouts look stubby, there is a full inch-and-a-half of axle adjustment available. The dropouts are cropped tight for a good reason: the shorter the steel plate is the less it can flex. Parallel axle slots insure that the head angle and seat angle remain unchanged regardless of rear axle positioning.

Not new by any means is the cradle-style, downtube-to-hanger configuration. Pedaling generates a greater amount of flex than anything else. Positioning the down tube below the centerline of the crank housing increases the surface

area of the welded joint. More weld area means wider load distribution and increased strength against flex-induced fatigue.

Forks: One for the Road

Two types of forks are available from Race Inc. One is the RF-M leading-axle style and the other is the RF-2M centerline fork. According to Race Inc., there is no difference, dimensionally, between the two. Both have a 12-inch flange-to-axle height and a 1.623-inch fork offset (measured from the centerline of the steering axis to the centerline of the axle). Since no difference in their geometry exists, both handle identically on the RM-2 frame. Two factors do favor the centerline unit over the RF-M leading axle fork. It's two ounces lighter and there is none of the flex that is inherent in all leading axle forks. Technically there is no reason to prefer the RF-M fork except that some people may like its looks. To us, whatever works the

best looks the best. Our recommendation would be to stick with the RF-2M centerline fork.

Quick and Stable

"Quick but stable" characterizes the RM-2 handling. These are two properties desirable in a competition frame that are very rarely found together. Cornering or zig-zagging through ess turns is simply a matter of flicking the bike over. Overall, the front end responds to a light touch; you don't have to force the bike into tight corners. In fact, if you do try to force it, you'll likely push the front end too tight, and then have to correct. As with any bike, cornering is improved if the rider keeps his weight forward, but the RM is a bit more forgiving than some. Even when the rider is sitting on the laid-back sixty-six degree seat angle, the front end still hangs in there reasonably well. With the seat up in a cruising position, its rearward angle can cause it to interfere with speed-jumping technique. We found the solution to be to set the seatpost a couple of inches lower than normal for serious racing situations. Up high the seat is in a great position for practicing and cruising around. It puts body weight into a position that makes the front wheel more loftable on wheelies. In power wheelies and speed-jumping situations the balance is excellent. The front end comes up with barely a nudge, yet it doesn't exhibit a tendency to loop over at all. It gets up there where you want it and goes right back down without a panic.

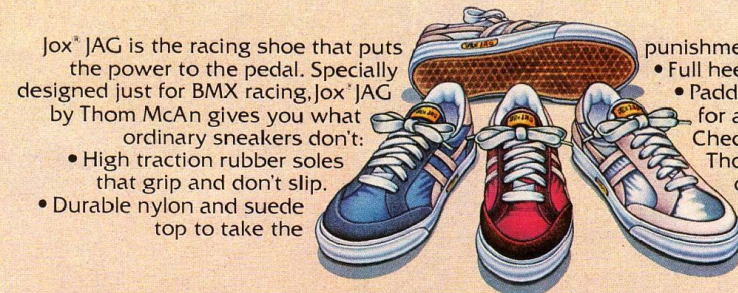
Conclusion

Is the RM-2 worth the money? Yes. Race Inc. took the precisely logical approach towards building it, and the result is a classic. Few manufacturers build bikes that come near to Race Inc. standards, and even fewer, if any, can meet those standards. The strange thing is that Race Inc. does it all on such a low profile. Their ads aren't pretentious and their product line isn't filled with fancy names (the designations are as functional as the designs: RA stands for "Race Inc.—Aluminum" and RM stands for "Race Inc.—Chrome-moly").

Legends have grown up around many a lesser machine, but Race Inc. is like owning a Nikon camera. It's a classic just because it is—not because of some myth or legend surrounding it. It's a precision-crafted tool. And that's what the Race Inc. is, simply because it is. □



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