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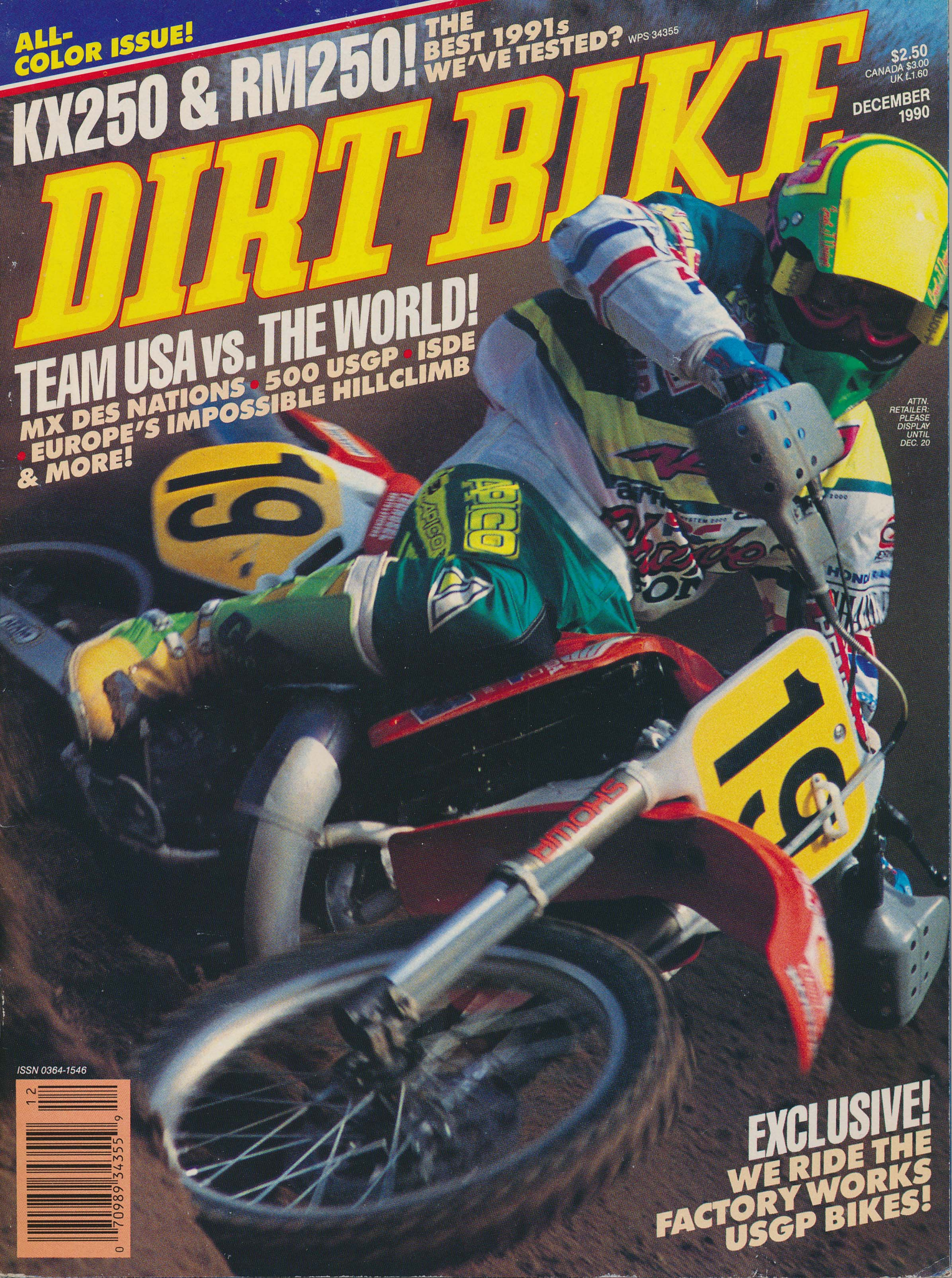

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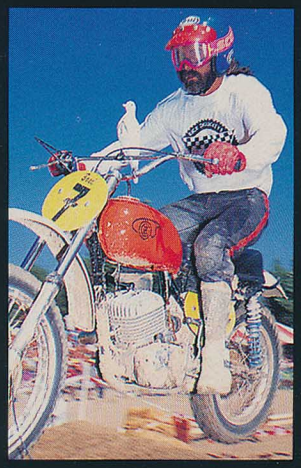
DECEMBER 1990
VOLUME 20, NO. 12

ON THE COVER: Jeff Leisk explodes a Swedish berm for the lens of Chris "Honeymoon" Hultner. Tasteful design by DeWest; color separations by Valley Film.



1991 BIKES

AMERICA vs. THE WORLD SPECIAL

FEATURES

DEPARTMENTS

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EVOLUTION OF A REVOLUTION

The perimeter flyer gets one year better

By the DIRT BIKE staff

Being the leader of the parade loses some of its appeal if the parade doesn't show up. Ask the engineers at Kawasaki, they know how it feels. In 1990 the Kawasaki KX250 was groomed to be out in front of a long procession of futuristic perimeter-framed motocrossers. It was going to be the father of a new generation.

It didn't happen. The KX now marches into the next year, perimeter flag held high, leading a contingent of absolutely no one. The reason is simple: The 1990 KX250 was not good enough to copy. It certainly wasn't a *bad* motorcycle, but that's a long way from being a prototype for a new era in motocross.

WHAT WENT WRONG?

As soon as the shock value of the new frame design wore off, riders began to notice things about the '90 KX. It was large. It was heavy. It had no low-end power. None of this necessarily had anything to do with the perimeter frame, but the KX's lack of overall dazzle made it an easy act not to follow.

Now the perimeter frame is in its second coming, and it's wrapped around a much better motorcycle. The 1991 KX250 is what the 1990 KX250 should have been. It's still not perfect, but it's good enough that the rest of the motorcycle industry might sit up and take belated notice.

Most of the improvement is in the motor. The '90 KX would stumble and cough at low rpm, then explode in a late, raspy power surge. Nobody really liked that. So the engineers at Kawasaki completely re-configured the porting arrangement. Whole ports were moved around. Some disappeared completely.

To recap last year's design, Kawasaki used something called "Boyesen ports" which served as auxiliary intake ports on either side of the main intake. Those are gone in '91. The boost transfer port is also gone. Kawasaki eliminated two bridges in the intake port in order to compensate for the lost intake area. The top of the exhaust port is also lower this year.

Kawasaki kept right on rolling after the porting changes were done. The ignition, which used to have two coils, now has just one. That means the engine doesn't have to work quite as hard as it did to produce the ignition current. As it turned out, the excess current wasn't needed anyway. The ignition curve also was re-shaped. Next came a new exhaust pipe. Engineers claim that most of the porting changes were aimed at increasing low-rpm power, and that the pipe retrieves some lost top-end. Finally, Kawasaki finished the job by re-balancing the crank to reduce the vibration that many riders found a problem with the 1990 model.

Will the KX250 be the prototype for the motocrosser of the future? Maybe. Finally, it's good enough to make people notice.

A BEEFIER KAW

From the first lap on the '91 model the facts are clear. The engine is real good, but it's different from any other motocrosser on the market right now. Where an RM or YZ jumps forward, the KX growls ahead. There are no peaks or valleys in the KX's powerband, just one great plain. The low-end power *is* much better than it used to be, but, more importantly, when the KX climbs on to that powerband it does so smoothly, without any violent hit.

Most of the credit goes to the KX's significant amount of flywheel effect. The last model needed all that flywheel to smooth out its on/off power curve. The '91 KX does not need it quite as badly, but it still helps smooth things out somewhat. It makes a gradual power delivery into a positively seamless one.

In terms of outright horsepower, the Kawasaki is average among the new 250s. If a fourth of the bikes at a local track are KX250s, then expect them to pull about a

RACE TECH KX250
SHORT-ORDER PERFORMANCE

• It was kind of eerie. The 1991 Kawasaki KX250 had been out for one week. Five working days. Most dealers hadn't even seen one, yet on the other end of the phone was Paul Thede (as in "Paul Thede's Race Tech"), remarking with words carefully planned to sound casual: "Yeah, we have a fully modified '91 KX sitting around the shop. Re-valved, ported, the works. You guys should ride it someday."

How could he have a fully tested and reworked bike so quickly? We called his bluff. "Love to," we said. "How about next week?"

Sure enough, Thede did have a fully tricked-out KX250. Even more amazing, it worked. Beforehand, we discussed our complaints regarding the 1991 KX and Thede agreed on every point. The rear suspension, we unanimously concurred, was the machine's weakest point, but since the new KX's rear suspension lever ratio was very close to that of the '90 model, Race Tech already had a good starting point. Same with the fork. Even though the tube diameter is larger in '91, the internals aren't anything new, so the modifications that worked on the '90 fork allowed Thede to get a jump on the new bike's modifications.

Getting the rear suspension so thoroughly dialed in dramatically changed the character of the entire machine. As expected, the modified KX was a lot easier to live with in the rough stuff than the stocker. The mushy feel that we originally complained about was gone and, much to our surprise, Race Tech did it without going to a stiffer shock spring or even cutting coils off the standard one. It's amazing what changes in damping can do.

Thede turned out to be a happy home wrecker when it came to the fork. Originally, we were happy with the stocker, but when we rode our test bike back-to-back with the Race Tech machine, we realized that there is room for improvement. Not only did the modified fork absorb impacts better, but it made the entire machine feel less clumsy in the turns. The KX still is a big bike, by anyone's standards, but with the front end working better, the machine's weight and size seemed less obvious.

We thought it wouldn't be so easy to make the engine better, too. The stock KX had a smooth powerband that we figured would only be ruined by porting. Ported bikes usually just hit harder, spin more and are harder to ride. Thede outsmarted us there, too. His KX actually was just the opposite. The Race Tech engine delivered its power

We thought the stock KX had a good powerband until we rode the Race Tech version. No matter how good something is, there's always room for improvement. ►

KAWASAKI KX250

Engine type	Liquid-cooled two-stroke
Displacement	249cc
Bore and stroke	67.4mm x 70.0mm
Carburetion	38mm Keihin
Fuel tank capacity	2.3 gal.
Gearing	14/48
Lighting coil	No
Spark arrester	No
Green sticker legal in stock form	No
Claimed dry weight	213 lb.
Running weight with no fuel	230 lb.
Wheelbase	58.3 in. (1480mm)
Rake/trail	25.5°/108mm
Ground clearance	15.2 in. (385mm)
Seat height	37.6 in. (955mm)
Tire size and type:	
Front	80/100 x 21 Dunlop K490
Rear	110/90 x 19 Dunlop K695
Suspension:	
Front	Kayaba inverted cartridge, adj. reb./comp., 12.2 in. travel
Rear	Kayaba aluminum piggyback, adj. comp./reb., 13.0 in travel
Country of origin	Japan
Suggested retail price	$3999
Distributor/manufacturer:	Kawasaki Motors Corp. P.O. Box 25252 Santa Ana, CA 92799 (714) 770-0400

PARTS REPLACEMENT COST

Piston	$52.60
Rings	19.98
Clutch plate (drive)	8.72
Clutch plate (driven)	5.93
Front sprocket	17.58
Rear sprocket	60.30
Front brake pads	32.00
Rear brake pads	32.00

fourth of the holeshots in a given year. No more. The Suzuki makes more outright power but requires more skill to ride. The Honda has more torque off the bottom but probably won't pull the Kawasaki on top. The KX is fine for novices through intermediates. Pros will have to grind out some more horses.

RIDING A SPINELESS MOTORCYCLE

What's life like when you have no backbone? If you're a Kawasaki, then it's stable and predictable. The perimeter frame that caused all the commotion last year is back. The part of the frame that starts at the steering head and goes below the engine to the swingarm pivot is perfectly conventional. Round tubing, wishbone downtube, etc., but from the swingarm pivot up, the frame is made of rectangular tubing. Two separate sections go around the outside of the fuel tank and connect to the top of the steering head. There's no backbone, so the shock

◄ Kawasaki borrowed some street-bike technology last year for its perimeter frame. Others will follow.

payload even more gradually than the stocker, making it one of the easiest-to-ride 250 MXers we had ever been on. It was a little faster than stock, too, but that wasn't the point. "Some people like a sharp hit to the powerband because it's more exciting and makes the bike *feel* faster," says Thede. "I try to build up a 'ramp' leading to that hit so the bike hooks up."

Race Tech charges $250 for the porting, $175 for the rear suspension re-valve and $185 to $195 for the fork ($45 for disassembly and re-assembly, $75 for re-valving, $50 to 60 for the spring modifications and $15 for oil). Yes, that's expensive, but it would be a shame to spend $3900 for a new bike and live with it being okay, when greatness is entirely possible. For more information, call Race Tech ([714] 594-7755). •

How do you make a good bike into a great one? Ask Paul Thede; he seems to have it down to a science. ▼

Although the KX engine is much improved over last year's, the bike still needs help in the suspension department.

mounts to an aluminum bridge that connects the two frame halves. What are the advantages? Torsional rigidity, for one. The frame can't twist and flex like a conventionally framed machine.

That's obvious from a ride on the machine. The KX is as stable as a monorail. When you pick a line, that line stays picked. It cruises at high speeds with amazing fixation—but, by the same token, the KX is a little clumsy in tight corners. This was a common complaint about last year's bike, so Kawasaki responded by bringing in the rake from 26.5 degrees to 25.5 degrees. That means it went from steep to *really* steep. The problem, though, isn't steering as much as the fact that the KX is a big motorcycle. Big in every dimension. It's taller than anything else in its class. It's wider than anything else in its class. It's heavier than anything else in its class.

Some of that can be directly attributed to the perimeter frame—it's heavier and wider than a normal frame. Where the rider's knees grip the radiator shrouds, for example, the Kawasaki is two inches wider than a Suzuki and almost three inches wider than a Yamaha. That takes a while to get used to and the rider's knees wreak havoc on the tank decals. You could argue that the perimeter frame doesn't have to be any wider than a conventional one, but the Kawasaki's is.

THINGS THAT GO BUMP

Kawasaki *didn't* change suspension makers for 1991. Instead of playing musical shocks like nearly everyone else, the KX still has a Kayaba shock and a Kayaba fork. The only real change in the suspension department is the diameter of the lower tube on the fork. Last year it was 41mm; now it's 43mm. In order to keep the weight down, the wall thickness is decreased from 2mm to 1.75mm. Kawasaki claims that the overall fork weight is down by over a pound.

The rear shock is unchanged, but the lever ratio is slightly different, starting off a touch softer in the first few inches of travel and winding up about the same as the '90 model. Even at the end of the curve, though, the KX's rear suspension is a bit on the soft side. It feels great on smooth tracks, but when the bumps get big, the wheel is almost always buried by the rear fender. With the sag set at 100mm for a 175-pound rider, most of the travel is used up even on little bumps. Increasing compression damping results in a bad kick when the bike hits sharp bumps. We finally dropped the sag to 90mm and kept the compression damping adjusted most of the way out, and that seemed like an acceptable compromise.

As regards the fork, we had few complaints. It was, perhaps, a little on the soft side, but unless the track has gnarly G-outs and killer sharp edges, there are no problems. On freshly graded tracks it makes for an exceptionally cushy ride. Overall, the suspension, like the engine performance, gets about a B minus. Good, but not top of the class.

GREEN DREAMS

That's the story with the KX. It's real good, but greatness is yet to come. Will others follow Kawasaki now? Yes. The 1991 Kawasaki KX250 is good enough to copy, and there will be other perimeter frames on the horizon soon. Whether or not they become a new industry standard remains to be seen —revolutions rarely happen overnight—but in its second try, Kawasaki has proven that the disadvantages of being different are manageable. Now it's just a matter of proving the advantages. □