

YZWR & YZ250: EXCLUSIVE FIRST TESTS!

INSIDE SUZUKI'S ALL-NEW RMX250!



DIRT BIKE

EARLIEST 500
SHOOTOUT
EVER!!!

KAWASAKI vs.
HONDA vs.
YAMAHA
vs. KTM

WPS 34355

JANUARY
1989

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GO-FAST GUIDE
FOR ALL HONDA XRS:
FROM 1981 TO 1990!



Decoster's
SUPER CR
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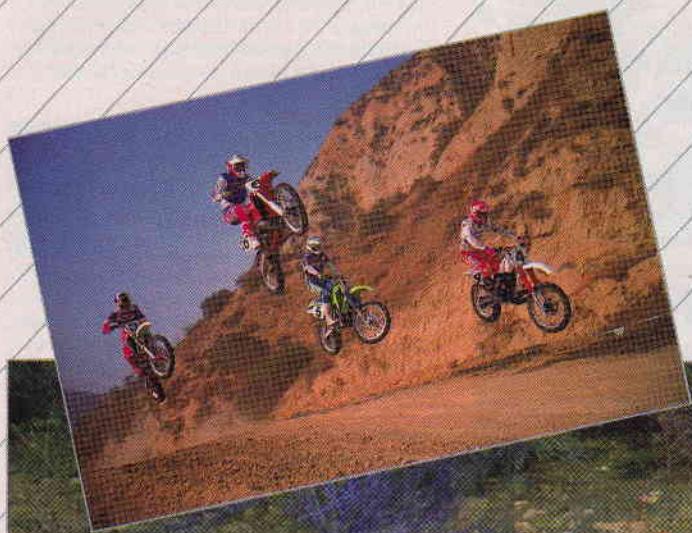
HUNKY'S
HODAKA
FINALLY GETS
OFF THE GROUND



HOW THE PROS DO THOSE
STYLISH AERIAL MANEUVERS!

1989 500 SHOOTOUT

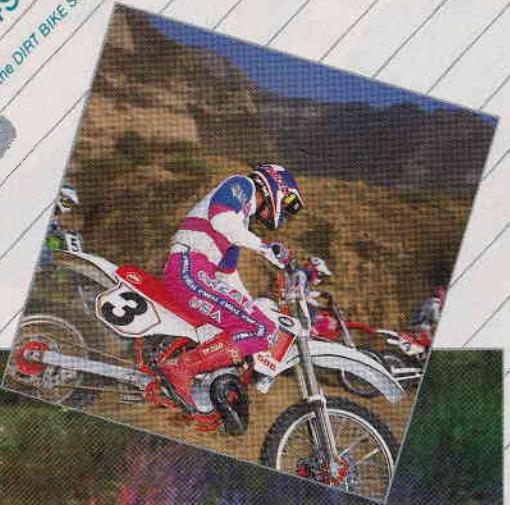
WARP DR

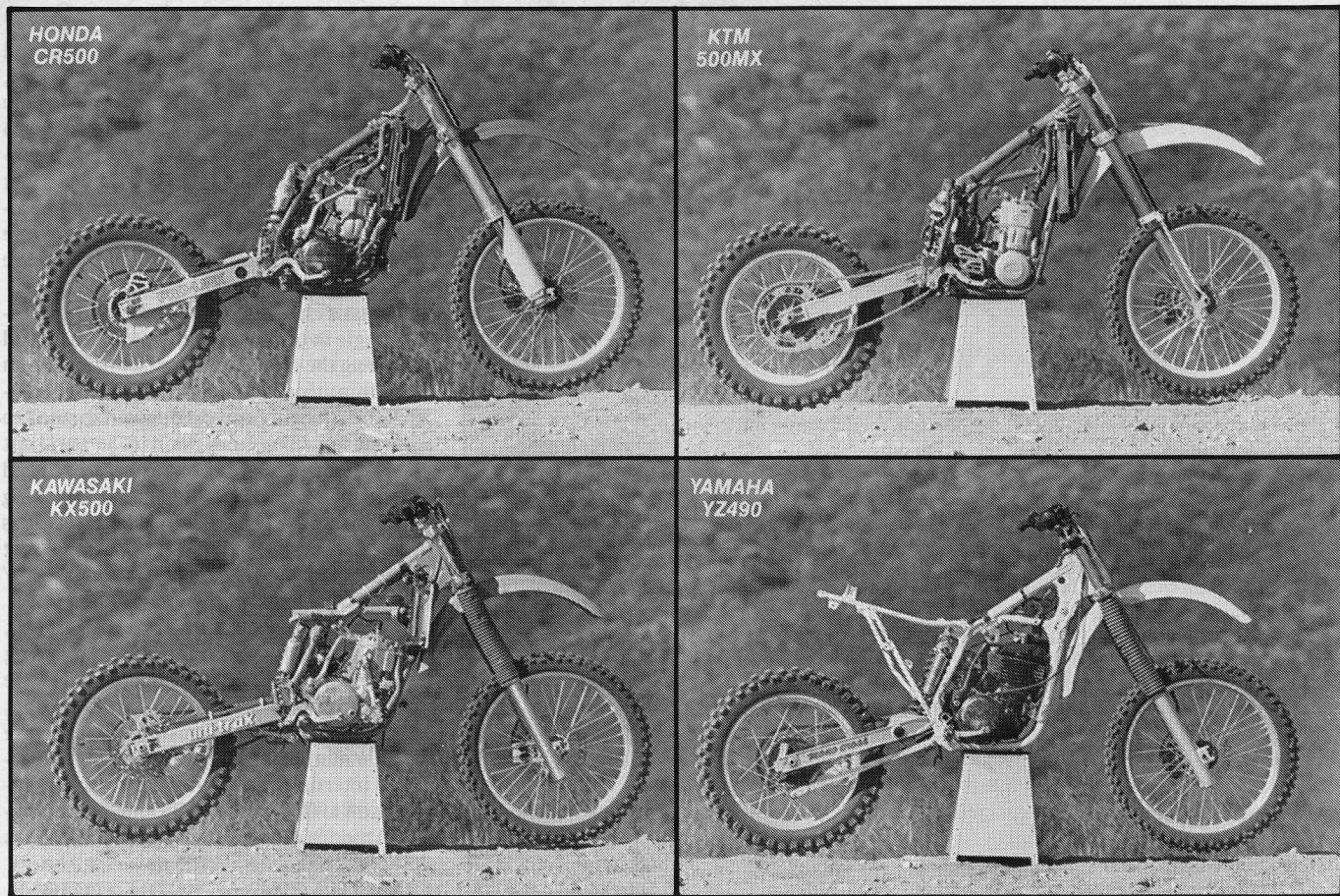


ME HARFARÉ!

CR500 vs.
KX500 vs.
KTM500
vs. YZ490

By the DIRT BIKE Staff





Ah yes, time to shake the earth once again with the Open Class Shootout. The smoke has barely cleared from last year's confrontation, where the KX500 squeaked out a close win over the CR and KTM while the ancient YZ490 played catchup. For '89 Kawasaki made big improvements to try to retain the title, while Honda and KTM also pulled out the stops to topple the green giant. Once again, Yamaha halfheartedly enters the shootout with a virtually unchanged, but much more expensive, model.

How much more are the '89s than the '88s? Would you believe that new stickers upped the YZ price tag by \$550 to a whopping \$3549? At least with the other bikes you get more technology for the price increase! Honda raised the price of the almost all-new CR \$909 to \$4098, while the Kawasaki offers almost identical changes for \$650, bringing

the price to \$3799. KTM had the least jump on their improved 500; it only jumped \$180 to \$3869. So, the CR is the most expensive, followed by the KTM, KX and YZ. Let's look at what you get for the larger price tag, then get to the shooting!

HONDA CR500RK UPGRADES

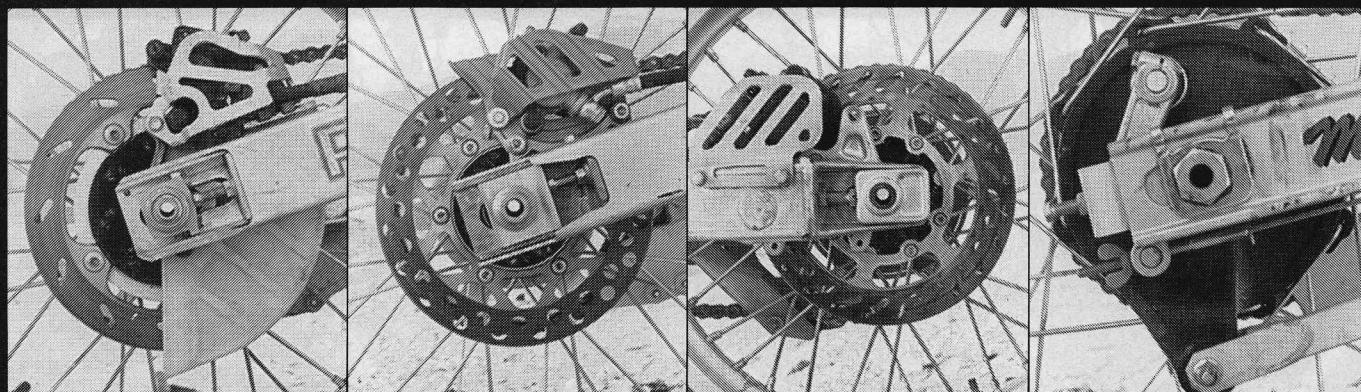
Chassis mods are the most obvious updates; the big CR now shares the "lowboy" layout of the CR250R for centralization of mass and a lower center of gravity. Rake has been kicked out three-quarters of a degree for less headshake, and the frame has received major gusseting to eliminate frame flex.

This is needed because of the rigidity of the new inverted Showa cartridge forks, which feature 12 inches of travel, 45mm lower tubes, 22.4-pound springs and 14-way adjustable compression damping. Out back, the 500 gets the piggyback "milk bottle"

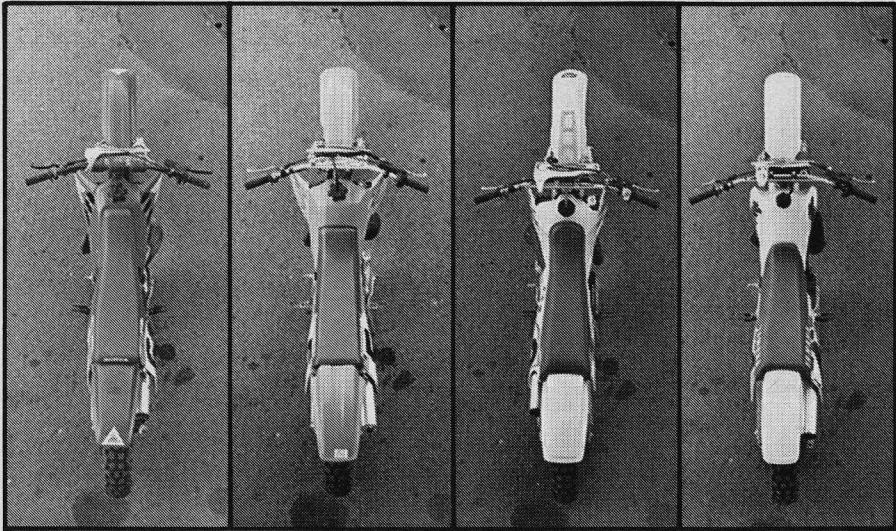
Showa single shock like the CR250R. It features a needle/bleed hole compression adjustment system for wider adjustability (22 positions), 21-way rebound damping adjustments, new linkage ratios, 5.8 kg spring and 13 inches of rear axle travel.

Easier starting and further mellowing power were goals again for '89, so the CR500 got head, porting and pipe modifications. Less compression and milder porting, mated with the lowboy pipe, yield a less brutal hit than '88 without sacrificing the awesome top-end capabilities. Easier starting is achieved with

WARFARE!



Left to right: Honda gets the rear brake award; the KX is as strong but lacks feel; the KTM finally feels Japanese; the YZ is in the Stone Age.



Left to right: Honda has the best seat/tank junction; the KX is wide but still feels like a 250; KTM is slim but tall; the YZ forces the rider too far back.

grooves in the cylinder above the exhaust port for less initial compression, and the kickstarter has been redesigned for better leverage. Durability was also a concern, so the '89 received a less stiff ring, modified piston pin, 3mm thicker cylinder skirt, improved clutch dampers, improved cooling spigot mounting, redesigned reed cage and better heat-treating of the countershaft. A huge silencer is also news; it quiets the exhaust note to 97 dB!

Lighter hubs, 12mm lower subframe, wider footpegs, new discs with less (but larger) cooling slots, Dunlop K695 (last year a K595 was standard) rear rubber, new plastic and nylon fork protectors are also new for '89. Does all of this make the \$909 price increase seem less dramatic?

KAWASAKI KX500E1 CHANGES

Kawasaki's goals were to stay abreast with Honda's suspension, motor and chassis updates while keeping the cost lower than the red machines. In the process, they added a few tricks of their own. A guillotine-type center exhaust height valve (like the KX250) in addition to the traditional KIPS valves were incorporated to smooth the low-end hit of the '88 motor while retaining the decompression system for easy starting, and the balance point of the crank was shifted 18 degrees for less vibration. Compression was dropped from 7.1 psi to 6.9. For more durability, both fourth gears (input and drive) were upgraded

to nickel chromoly steel, and the clutch actuation system now rides on needle bearings. Dimples on the clutch plates decrease clutch slippage by increasing oil dispersion. Three engine mount bracket bolts were increased from 8mm to 10mm diameter. The head was redesigned for lightness, and a 28mm longer silencer drops noise output to 97 dB.

Frame material was changed to high-tensile-strength steel, and steering head angle was pulled in from 28 degrees to 27. An aluminum steering stem, new hubs and a thinner front disc lower weight a claimed 4.4 pounds. Nissin dual-piston calipers increase stopping power over last year, and they went to a 19-inch rear wheel for improved cornering. Denser, longer-lasting seat foam is used this year, and they switched from Bridgestone M22/23s to new M51/62s.

While Kawasaki planned on fitting the KX lineup with USD Kayaba forks, they couldn't dial damping to the level of Team Kawasaki's 46mm cartridge forks, so they decided at the last second to go with the conventional (but larger diameter than last year) units. The 46mm cartridge KYBs feature 16-position compression damping adjustment and 22.1-pound springs. Out back, the hard-anodized piggyback KYB features a 5.4 kg spring and 16-position compression and rebound damping adjustability. Best of all, the '89 KX500 is \$299 less than the Honda.

KTM 500 MOTOCROSS UPDATES

KTM's '88 motor was excellent; it started criminally easy and had a broad powerband, so why mess with it? Changes for '89 were minimal; it got a 2mm-longer stroke (to 80mm) for a displacement of 499cc and relocation of the cooling inlet from the exhaust to the intake side for cooler operating temperature. A new headstay and higher-volume airbox-to-carburetor boot rounds out the motor changes.

Chassis changes include pulling the steering angle in one-half degree (to 27-1/2) and reducing the triple clamp offset from 22mm to 18mm; this increases trail for less headshake. The swingarm pivot was relocated to provide less effect from chain torque, and last year's floating rear brake has been replaced by a non-floating unit. Front and rear braking are handled by single-piston Brembo calipers this year. Orange-red hubs, calipers and seat give the bike a new look, while Metzeler MX/E front and rear tires are standard.

Changes to the White Power piggyback shock include new bushings, 5.6 kg spring and revised damping. Linkage ratios are changed by the new swingarm pivot location, and seals and bushings are new. Up front, the USD White Power forks feature all-new cartridge internals, externally adjustable compression and rebound damping, and made-for-America damping. That extra \$180 buys a lot for '89!

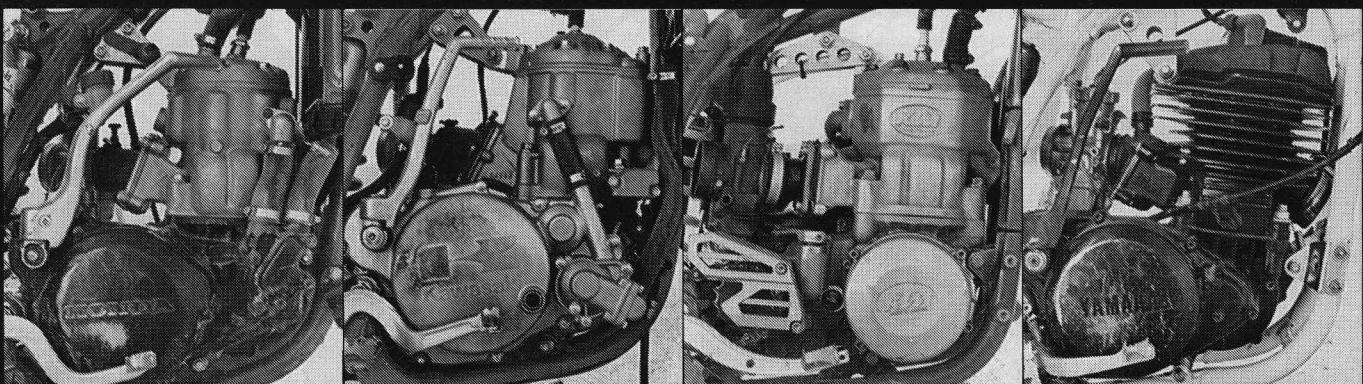
YAMAHA YZ490W MODIFICATIONS

For \$550 more than last year, the YZ buyer gets minor frame updates and new decals. How can Yamaha snivel about contending the 500 Nationals and lagging Open-class sales when they put absolutely no effort into the outdated YZ490?

We installed our Paul Thede modified head off of our '88 YZ to smooth out detonation and tested the machine as is. All other machines were stone stock, except for tires; we ran K490 and K595 on all bikes to get a better handle on cornering and handling abilities of the machines with equal rubber. Let's start shooting!

MOTOR WARFARE

Kawasaki takes the performance award with a magic motor; it is much smoother and more usable than last year and barely edges out the KTM. Power is less abrupt than the Katoom on bottom, so it hooks up better on slick surfaces, plus it revs out to stay with the



Left to right: Honda has the best clutch and Pro-oriented power; Kawasaki tamed vibration and the midrange burst; KTM lengthened stroke 2mm and moved the liquid-cooling inlet; the YZ490 is unchanged.

WARFARE!

KTM and CR on top end. Clutch and transmission action were also very good. Second goes to the KTM, which has a good low end, hard-hitting midrange and awesome top-end runout. Many testers liked the Katoom power best, but it was held back by a dragging clutch and too-long shift throw.

Third goes to the CR500R, which some pros felt was mellowed too much for '89. The CR has less low-end than the KX and KTM (and '88 CR), a smooth-building midrange and longer top-end runout; in other words, it's a pro-oriented motor. Clutch action is unequaled, but it vibrated more than the KX or KTM and we sometimes had trouble with upshifting to third under full throttle. Fourth, as expected, went to the YZ490; even with the modified head, it built revs sluggishly and didn't produce any usable power until the upper midrange, where it would start pulling like an Open bike should. Shifting is stiff, and the clutch had a mushy feel to it. It also vibrates and rattles to the point of being annoying.

LIFE WITH THE MOTORS

Starting honors go to the KTM; it starts first kick, hot or cold, and the flatslide Dellorto carburetors perfectly. Second goes to the CR500R; it starts much easier than last year when hot and will cold-start on the first kick if you follow the drill. Turn on the gas and lean the bike over until fuel drools out of the overflow tube. Close the throttle, kick hard, and it'll light.

Third in starting goes to the Yamaha, which balks at cold-starting unless you blow into the bottom vent tube. Weird. The KX takes fourth. Getting over the high-mounted kick-start lever is awkward, and it takes a few kicks when cold. Rocking back and forth with the bike in gear to charge the cylinder helped.

FORK ACTION AWARDS

Out of the crate, the KX500 delivered unequaled smoothness and ground-absorbing abilities. Fast pros said the forks dove a tad much in corners, but everyone agreed that the KX forks offer the best initial plushness and bottoming resistance. Second goes to the CR500, which required an oil-level increase

Mary Partlow

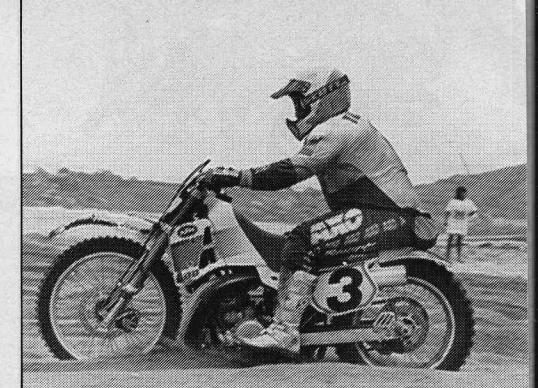
Willy Musgrave on the YZ490: "It isn't as bad as I thought it would be; it pings, has a crummy rear brake and doesn't turn very well, but it's stable and has good forks."

Mary Partlow

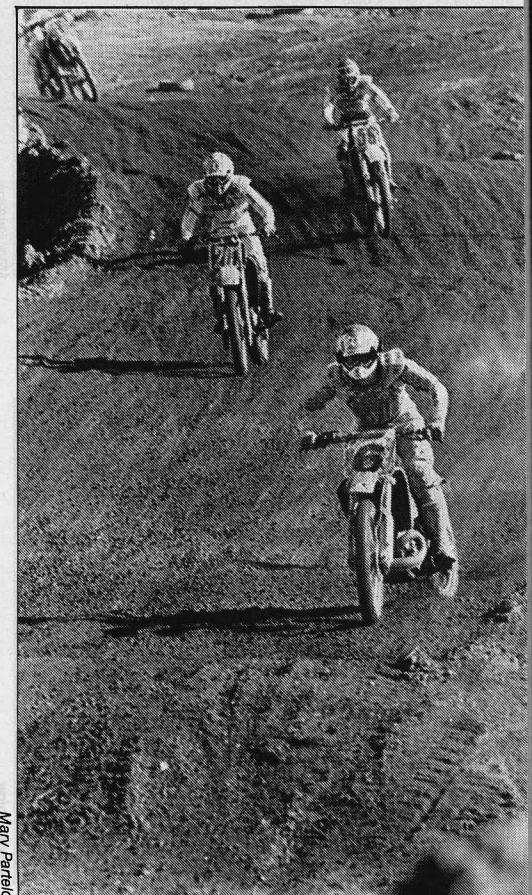
Ed Arnet on racing the KX500: "It's perfect; the forks are fantastic, and the shock can be dialed for a rough or smooth track with just a couple of clicks on the compression and rebound damping."

Mary Partlow

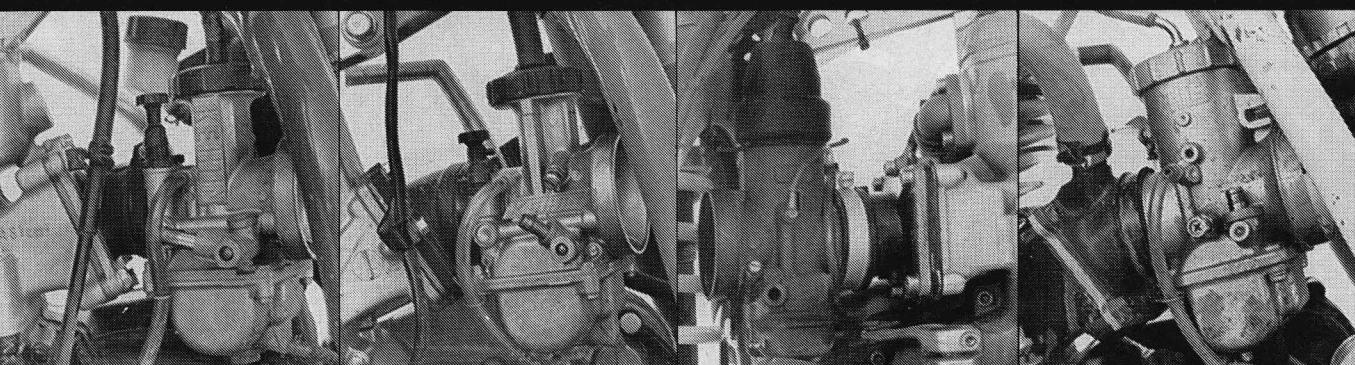
Arnet on racing the CR500R: "Both the forks and shock are fine if you really attack the bumps, but you have to be in great shape to ride that way for a long moto."



Tim Tolleson rode the Rosarito Beach GP on the KTM and felt "suspension was good on deep sand whoops and the bike handles well, but it didn't want to shift under full throttle."



Mary Partlow



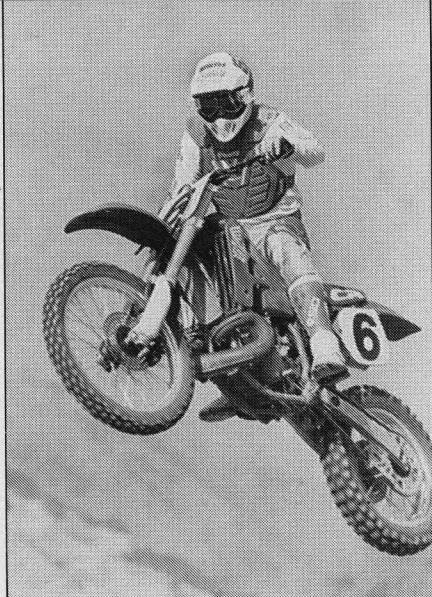
Left to right: CR carburetion (38mm Keihin PJ) is unchanged but the reed is moved in 7mm; Kawasaki claims that slide sticking (like last year) isn't a problem on the 39mm Keihin PKW; KTM went up to a #195 main but needs a #45 pilot on the 40mm Dellorto; the YZ's 40mm Mikuni is still thirsty.



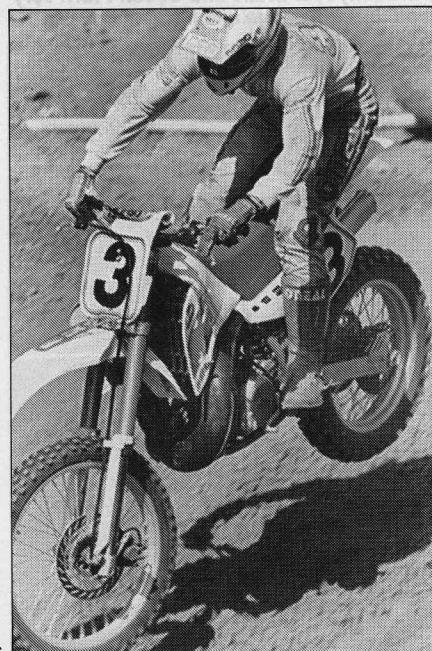
From beginner to pro, all riders immediately felt comfortable on the KX500. It's the most race-ready out of the crate. Our front master cylinder failed at eight hours.



Because the YZ's rear shock is so over-damped on the initial travel, it wants to stand up in midturn and kick on square-edged holes. On the other hand, it likes to go straight and makes a good desert bike.



Greg Zitterkopf likes the CR's power, clutch and brakes but feels the forks are harsh on small stuff and the shock's rebound is a tad heavy. Zitt complained of the handlebars being too tall as well.



Riders below 5'9" complained of a too-tall seat height on the KTM 500, so we tried the optional low seat and could move around much easier. The hot ticket is the 600 LC4 seat which is in between the tall stocker and almost too-low optional seat.

(see CR setup article in this issue) to overcome bottoming. Initial and midstroke damping were harsh out of the crate but backing off of compression made bottoming a problem. Also, riders above 180 pounds will want stiffer fork springs.

Third goes to the KTM, which is plush over small stuff but harsh on mid-sized spike loads for fast riders. We revalved the forks for smoother midstroke damping on a super-rough track but had no complaints with the stock valving on less brutal courses. Once valving is finalized (ours was an early production unit), knob tweaking will dial the forks for any track. Fourth goes to the 490, which is too soft in the initial travel and a tad harsh on bigger hits, mainly because it rides too low in the progression curve. Lighter pros said they felt fine, while bigger fellows complained of too-soft action.

SHOCK OSCARS

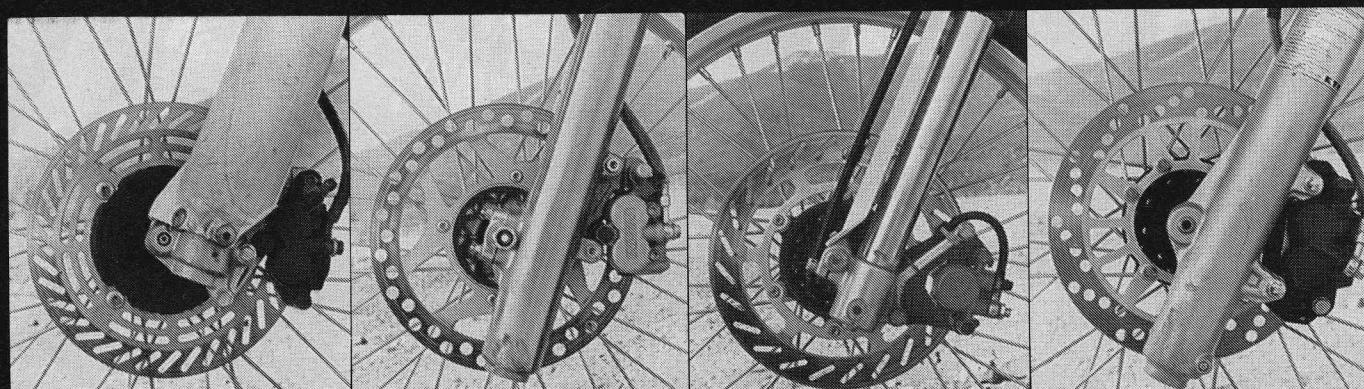
Kawasaki once again feels perfect, right out of the box. Initial action is plush, and it progresses to soak up G-outs without bottoming. Novice and pro riders raved about the feel, without ever tweaking a knob. Honda takes second with a shock that requires the rider to be on the gas to work properly. Pros dig the action, while novices complain of too-harsh midspeed compression damping. Riders heavier than 190 pounds will need the optional 6.2 kg spring.

Third goes to the KTM, which drew complaints from the lighter experts for having a too-stiff spring rate; these riders were more pleased with the 5.4 kg spring but still complained of a harsh midstroke. Part of the problem lies in the more radical progression curve. The Yamaha takes fourth with too-stiff initial travel and too little resistance to bottoming; it also tends to kick up on braking bumps.

HANDLING TROPHIES

Due to its excellent suspension, the Kawasaki takes top handling honors; it turns extremely well, hooks up very well out of turns and goes where you point it. Straight-line stability isn't as good as last year, but it is a very confidence-inspiring machine and far superior, stone stock, to its cronies.

Second is a toss-up, depending on rider aggression. Honda is pro-oriented, with turning abilities equal to the KX (once the suspension is dialed) and good straight-line stability as long as it's under power. In braking bumps



Left to right: Honda's front brake is perhaps too strong; the new Nissin KX caliper is strong; KTM's Brembo is a big improvement; the YZ490 front binder is as good as the KTM.

WARFARE!

VITAL STATS

CATEGORY	CR500R	KX500	KTM500	YZ490
Claimed dry weight (lbs.)	223.8	220.5	224.8	226.0
Actual running weight (lbs.) no gas	233.0	233.25	239.5	236.25
Sound output (MIC 20" test)	97	97	102	101
Fuel range (Mi)	40-45	37-45	30-35	35-40
Top speed (mph; stock gearing)	73.6	78.1	76.1	75.5

PERFORMANCE TIMES

TEST	CR500R	KX500	KTM500	YZ490
PERRIS/ARNET	1:27.45	1:26.47	1:24.83	1:28.97
PERRIS/MURRAY	1:28.55	1:25.88	1:28.99	1:33.33
DEANZA/KRAUSE	1:27.74	1:26.54	1:29.77	1:30.93
DEANZA/ZITTERKOPF	1:22.93	1:21.63	1:22.86	1:25.73
ACCELERATION (1/10th mile)	8.08	7.89	7.91	8.03

• Perris Raceway is a brutally whooped-out tight sand track. Ed Arnet and Pete Murray are expert regulars; Ed normally rides an RM250, while Pete rides Cagivas. De Anza Cycle Park features hardpack terrain and wide-open conditions. Paul Krause is an expert desert racer and intermediate motocrosser who rides KX250s and 500s, while Greg Zitterkopf is an expert motocrosser/desert racer who rides an ATK6004E. Acceleration times were conducted on hardpack ground from a standing start. All times are averages, and it should be noted that lap times can vary due to rider fatigue and track deterioration. •

it can become a handful very quickly for amateur riders. For non-pros the KTM is the second-best handler; it turns well (but not equal to the KX or CR) and tracks well in gnarly terrain as long as it isn't pushed too hard. Many pro riders lack confidence in the stock KTM settings because of the stiff shock and stiff midstroke in the forks.

Last goes to the YZ490, which feels extremely long and sluggish in turns. The front end tracks well, but it seems like the rear doesn't want to follow. Also, the stiff initial shock travel makes it want to stand up or slide out coming out of turns under hard acceleration. In braking bumps it headshakes (soft forks and stiff rear) and is very unpredictable. Pros could make it work, but no one really ever felt confident while riding the YZ.

HAULING IT DOWN FROM SPEED

Honda once again takes top braking honors; the front is bordering on too strong, and the rear is excellent, due to the revised brake pedal—it has less mechanical advantage on the master cylinder. A close second goes to the KX500, which has strong binders front and rear, but a few riders complained of mushy feel up front and others stalled it un-

til getting used to the stronger rear binder. A close third goes to the much-improved KTM; it equaled the KX and CR out back but required too much pressure to haul down the front binder. Yamaha brings up the rear with a comparatively non-existent rear brake and good front setup.

LAYOUT & COMFORT AWARDS

Because it does everything so well, the KX is the most comfortable machine to ride. The suspension is plush, and layout is excellent, although taller riders felt cramped on it. Most loved the smallish layout and taller/firmer seat and more forward bar position. Honda's lowboy CR500R has an excellent layout with the exception of the funky handlebar bend. Once the suspension is dialed to get rid of the midstroke harshness, it takes second in comfort. As delivered, it pumps the forearms very prematurely, unless the bars are run way back, which is senseless on an open bike.

KTM gets third in comfort, due to the tall seat (the KTM 600LC4 seat is one inch shorter). Vibration is low, and all controls fall readily to hand when needed. Due to immense vibration and noise levels, as well as harsh rear shock, nobody wanted to ride the YZ490

very long. The bike is a real tingler in wide-open stuff and a handful in twisty trails.

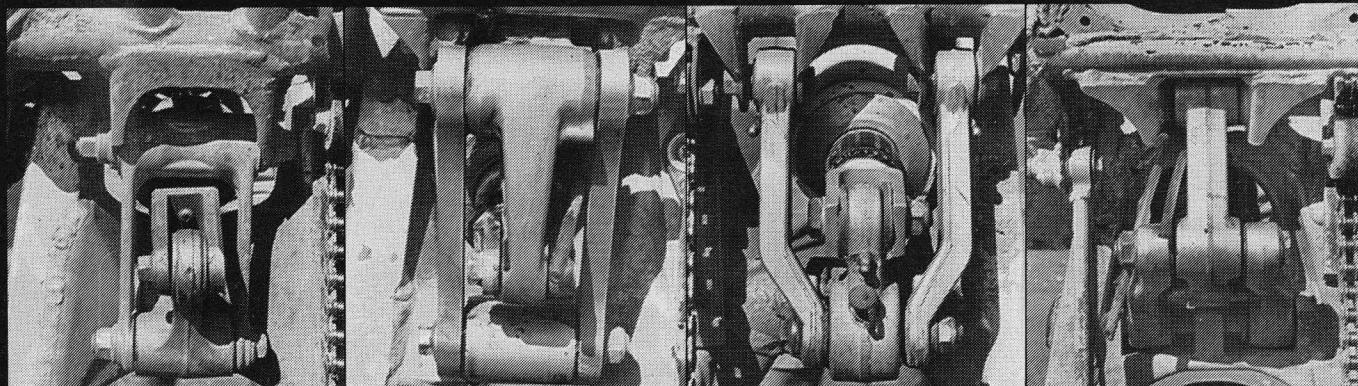
WRENCHING RIBBONS

Air filter servicing is the easiest on the KTM; it's a toolless operation. Access to the spark plug is acceptable, which is good, because you'll foul plugs until the pilot is dropped to a #45. Speed of rear-wheel removal is good, but the front could have a more simple setup for changing front flats. Honda takes second with excellent attention to detail and a roomy under-the-seat access airbox, but the spark plug is hard to get to.

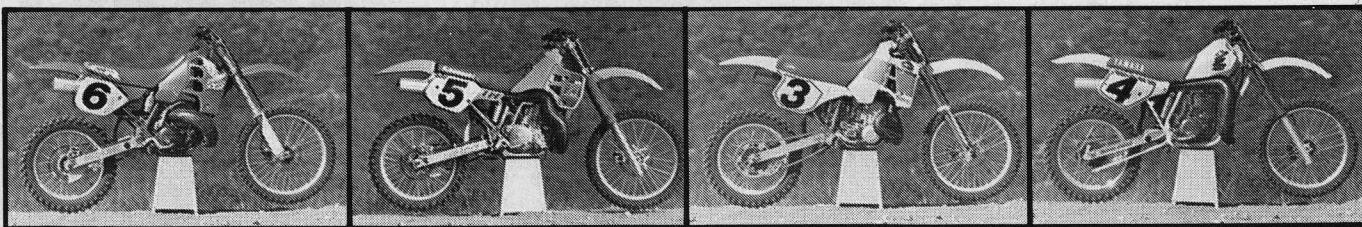
Spark plug access is easiest on the KX500, and it has a good airbox design, although it's more cramped than the Honda. Also, front-wheel removal is complicated by spacers. Last place, once again, goes to the Yamaha; although it isn't hindered by radiators or plumbing, it has almost impossible spark plug access. Because of the drum, rear-wheel removal is the worst of the bunch.

BITS & PIECES

• Clarke (503/829-2156) and IMS (714/781-5849) already offer large-capacity gas tanks for off-road use on all machines except for the KTM, which is an OEM option.



Left to right: Massive bolts support the CR Delta-Links; KX linkage and shock offer the best action; KTM has new shock bushings and damping and is the only bike with zerk fittings; the YZ is unchanged and too harsh.



CR500RK

Engine type	Single-cylinder, reed-valved, liquid-cooled 2-stroke
Displacement	491.4cc
Bore & stroke	.89mm x 79mm
Carburetor	38mm Keihin PJ oval slide
Fuel tank capacity	2.4 gals (9L)
Gearing	14/51
Wheelbase	59.0 in. (1500mm)
Tire size & type:	
Front	80/100-21 Dunlop K490
Rear	110/100-18 Dunlop K695
Suspension:	
Front	Showa USD cartridge, adj. comp., 12 in. (305mm) travel
Rear	Pro-Link, Showa hard anodized piggyback, adj. comp. & reb., 12.8 in. (320mm) travel
Ground clearance	13.8 in. (350mm)
Seat height	38.2 in. (970mm)
Country of origin	Japan
Suggested retail	\$4098
Distributor/manufacturer:	American Honda Motor Corp., 100 W. Alondra Blvd., Gardena, CA 90247

KX500E1

Engine type	Single-cylinder, power (KIPS) and reed-valved, liquid-cooled 2-stroke
Displacement	499cc
Bore & stroke	.86mm x 86mm
Carburetor	39mm Keihin PWK crescent slide
Fuel tank capacity	2.6 gals (9.9L)
Gearing	14/47
Wheelbase	58.7 in. (1490mm)
Tire size & type:	
Front	80/100-21 Bridgestone M51
Rear	110/90-19 Bridgestone M62
Suspension:	
Front	Kayaba 46mm cartridge, adj. comp., 11.8 in. (300mm) travel
Rear	Uni-Trak, Kayaba hard anodized piggyback, adj. comp. & reb., 13 in. (330mm) travel
Ground clearance	14.6 in. (370mm)
Seat height	37.4 in. (950mm)
Country of origin	Japan
Suggested retail	\$3799
Distributor/manufacturer:	Kawasaki Motor Corp., 9950 Jeronimo Rd., Irvine, CA 92718

KTM500MX

Engine type	Single-cylinder, reed-valved, Boyesen Tri-Port Exhaust, liquid-cooled 2-stroke
Displacement	495cc
Bore & stroke	.89mm x 80mm
Carburetor	38mm Dellorto round slide
Fuel tank capacity	2.4 gals (9L)
Gearing	14/50
Wheelbase	58.3 in. (1480mm)
Tire size & type:	
Front	3.00-21 Metzeler MX/E
Rear	4.50-18 Metzeler MX/E
Suspension:	
Front	White Power 4054 USD, Adj. comp. & reb., 11.8 in. (300mm) travel
Rear	Pro-Lever, White Power steel piggyback, adj. comp. & reb., 13.6 in. (345mm) travel
Ground clearance	15.0 in. (380mm)
Seat height	38.8 in. (980mm)
Country of origin	Austria
Suggested retail	\$3869
Distributor/manufacturer:	KTM America, 1906 Broadway, Lorain, OH 44052

YZ490W

Engine type	Single-cylinder, reed-valved, air-cooled 2-stroke
Displacement	487cc
Bore & stroke	.87mm x 82mm
Carburetor	40mm Mikuni round slide
Fuel tank capacity	2.6 gals (9.9L)
Gearing	14/48
Wheelbase	58.1 in. (1475mm)
Tire size & type:	
Front	80/100-21 Bridgestone M23
Rear	110/100-18 Bridgestone M22
Suspension:	
Front	Kayaba 43mm cartridge, adj. comp., 12 in. (305mm) travel
Rear	Monocross, Yamaha steel piggyback, adj. comp. & reb., 12.6 in. (320mm) travel
Ground clearance	13.2 in. (335mm)
Seat height	37.4 in. (950mm)
Country of origin	Japan
Suggested retail	\$3549
Distributor/manufacturer:	Yamaha Motor Corp., 6555 Katella Ave., Cypress, CA 90630

WARFARE!

• Kawasaki offers wide-ratio transmission and lighting-capable ignition kits for the '89 KX500, plus they have a very generous off-road contingency program. There are tons of green machines racing the deez and enduros these days, and the quieter pipe will ease registration and land-use hassles!

• Honda has a generous contingency program for motocross, and last year's wide-ratio gearbox kit will fit the '89. The quiet pipe is also good news for off-road enthusiasts.

• Gearing up will make the KTM competitive in off-road events, although careful silencer repacking is needed to meet the 100-dB EPA limit for off-road cycles. The EXC lighting ignition and other options bolt on for added versatility.

• Tuning specialists can bring the YZ490 motor and suspension up to speed (see the Modified 500 Shootout in the June '88 issue), but it'll end up costing more than any other bike. If it carried a price tag of \$2500, it would be a good buy, but for \$3500—forget it!

• Yamaha is preparing a Wrench Report for modifying the cylinder head to cure detonation in the YZ490; squish angle is changed from 22 to 20 degrees, the squish band should be 18mm wide, and standard head volume is retained. Paul Thede (714/594-7755) modified our head for \$70.

• After breaking in the KTM, we changed from a #50 pilot to a #45 and went from a DQ270 needle jet to a DQ268. Although the airbox boot is larger for less velocity, it's still possible to suck grit past the filter lip into the carb. Cut the top of the airbox off and replace the foam on the side lid with clear Lexan. This provides better flow and waterproofing while allowing you to see if the filter needs cleaning!

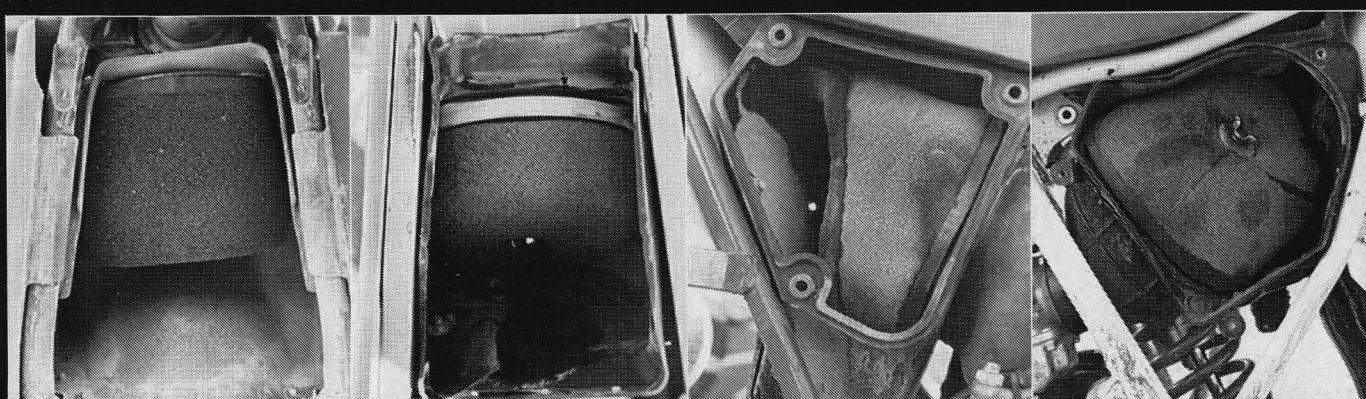
• The CR has a quicker-turn throttle and a great kickstart lever!

OFF-ROAD RATINGS

Although it's the hardest-starting 500, the out-of-the-crate capabilities and off-road support make the KX500 the obvious choice for all-around off-road riding. Second goes to the versatile and easy-starting KTM 500, while the CR500R takes third with an excellent motor, brakes, handling and kits for off-road versatility. Even with a head mod to improve reliability and rideability, the Yamaha is under-suspended and overpriced to be competitive in the off-road world.

MOTOCROSS & OVERALL SCORES

Kawasaki takes a big win over the improved KTM and pro-oriented CR500R, which tie for second, while the obsolete YZ490 again brings up the rear. The KX500 takes the overall victory with an awesome motor and suspension powering it to a perfect 1-1, while the KTM edges the Honda on versatility as well as price. If the Yamaha were priced lower (so that you could buy it and hop it up for a \$3500 total), it would fare much better in the marketplace and on the trail. □



Left to right: CR airbox design is good but the filter is a tad restrictive; KX design is foolproof; KTM has the easiest servicing and a Twin-Air filter; Yamaha's side-access airbox is too time-consuming and the filter stinks.