

The 250 Motocrossers

They're ready for the showdown at last. For the first time ever, all four motocross superpowers have squared off with four radically new 250cc weapons at once, and they're prepared to shoot it out for the undisputed title of Quarter-Liter King. Never before has so much new hardware been dropped on the 250 class in a single year. Back in 1980 Kawasaki and Yamaha grabbed the spotlight with all-new machinery, but it wasn't until the next year that new Honda and Suzuki motocrossers hit the market. That pattern repeats itself so far back as Japanese MX involvement goes. It seems that all four manufacturers never make their best efforts in the same year.

But now that pattern has been broken. You won't find any of last year's non-factory bikes under new decals here. All four bikes enter '82 with '82 technology. And all four bikes are intended to be the best motocrossers ever, prompting the toughest showdown ever.

CYCLE's editorial tastes were whetted for a 250 shootout earlier this year when we tested the Suzuki and the Yamaha separately. Both machines now are liquid-cooled. And, as dramatic as that may seem, it's one of the least earth-shaking facts about a year that has been filled with changes and innovations. Both bikes are more radically affected by other moves. The Suzuki's new motor is an over-square quick-revver. The fact that the RM is so changed only one year after the Full Floater's highly successful introduction is surprising. And in the past, we were even more surprised by the RM's abundant power and light weight.

The Yamaha has undergone an even more radical transformation. Backing the YZ in the face-off are Power-Valve technology, the most sophisticated rear suspension system yet delivered into the hands of non-factory riders, and a

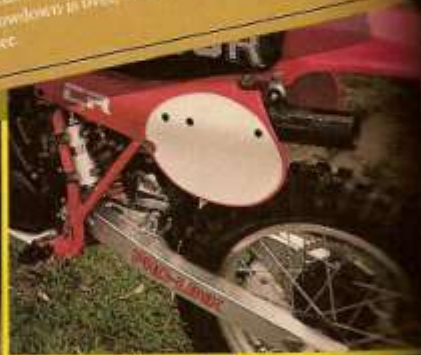
world championship title. Both the Suzuki and the Yamaha are corporate best-of-efforts that demonstrate each company's 1982 take-no-prisoners attitude.

A reworked CR250R shows that Honda has the same serious ambitions. Perhaps a better designation would be CR250RD, because the new Honda has a heavy dose of Roger DeCoster built in. DeCoster arrived at Honda too late to be a major influence on the '81 models. But he proudly presents this year's CR as if it were his personal creation and claims it is beyond comparison with anything Honda has previously built. With a redesign emphasizing the frame and suspension departments, the Honda steps out into the street, backed by one of the straightest scooters in the business.

Even the Kawasaki is lined up and ready to fire. A bystander might write off the KX right from the start. After all, it isn't even liquid-cooled and it's going up against the most deadly MX gun in the world. But the Kawasaki could be the most improved machine of all. It's lighter and faster than before, and has more than its share of innovations, from disc brakes to all-new pier layouts. So little remains of '81 that Kawasaki gave it a new name: the year's KX250A. Billy Lykes proved the bike is anything but a write-off when he bombed the factory machines at the Anaheim Supercross opener on a stock B and made it to the main—an almost unheard-of occurrence for a little-known rider on a production motocross machine.

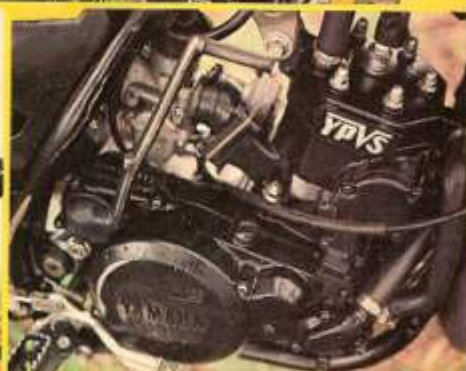
The Kawasaki, like the other three, is a serious contender. Each bike stands at the leading edge of motocross technology, nothing but the best. But it's high noon in the 250 class. And when the showdown is over, only one machine can roll away as the winner.

Three ways not to lose; one way to win.



COMPARISON TRACK TEST:

Honda CR250R, Kawasaki KX250B1,
Suzuki RM250Z, Yamaha YZ250J



The 250 Motocrossers: Tech Inspection

Honda CR250R

Engine:

Top End: The CR250R retains last year's liquid-cooled cylinder. A large oval intake port is still fed by a 37mm Keihin carb through a six-steel-petal reed valve. The fuel mixture enters the crankcase under the piston skirt and through two ports which lead from the intake tract to the cylinder base just behind the rear pair of transfers. During the transfer cycle, these same two intake ports also feed fuel back up to a single booster port in the rear of the cylinder while four main transfers carry the bulk of the mixture to the combustion chamber. A bridged central-exit exhaust port empties into an exhaust system reconfigured to give the header pipe more ground clearance and the engine better midrange response.

Bottom End: Slightly advanced ignition combines with a 1.9-pound-lighter crankshaft to help the CR250R respond more quickly. A gear-driven pump on the left-hand end of the crank forces coolant through a new Dual-Flow cooling system that routes hot coolant from the cylinder head to the top of each separate radiator rather than through the two in series. Cooled liquid is now drawn from the base of each radiator, through a 'Y' connector and into the pump. The only connection between the two radiators—now mounted 60mm lower to drop the bike's center of

gravity—is a filler pipe and cap just behind the steering head.

Drivetrain:

Primary Drive: Straight-cut gears transmit power to an improved clutch that has different plates (resurrected from the '73 CR250) and more spring preload to eliminate the slippage that sometimes occurred on last year's clutch.

Gearbox: The countershaft and shifter shaft were drilled and plugged to reduce weight. A redesigned shift-drum locating boss helps prevent engine-case breakages that cropped up on earlier CRs. First- and second-gear pinions have their engagement dogs undercut for more-positive engagement. The kickstarter arm is longer and attached with a single bolt threaded into the end of a stronger shaft rather than by the previous pinch-bolt clamp that fouled the clutch cover.

Suspension:

Front: The CR's forged-slider Kayaba fork has a 2mm-larger stanchion-tube diameter than last year's fork and three-way-adjustable compression damping. A slotted adjuster in the base of each slider regulates the damping, but the rebound can be adjusted only by changing oil viscosity.

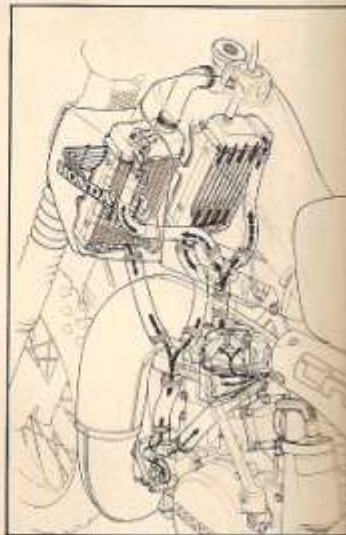
Rear: The Honda still has Pro-Link rear suspension, but its new and stronger box-section aluminum swingarm also is longer and has an inline axle rather than one with an upward offset like on last year's CR. Consequently, Honda had to alter the linkage geometry and spring rate to achieve the same basic progression curve and wheel rates. The Pro-Link concept is unchanged, though, with the upper end of the Showa shock (which is 5mm shorter, eye-to-eye) bolted to the frame just behind the tank. The shock's lower end is affixed to the center of a short bell-crank which has one end connected to the swingarm and the other to the frame via a short linkage rod. The new shock also has four-way adjustment for compression damping rather than rebound. Honda claims that adjustable compression damping—which can be varied to suit different tracks, riding styles and rider weights—is more useful than adjustable rebound damping, which needs to be changed only to suit different springs and



CR motor looks the same
But inside it's lighter and faster.



Revised linkage and Showa shock
New geometry, the same rising rate.



The CR's Dual-Flow system
Lowering coolant temperatures.



Pro-Link box-section swingarm
Straighter and stronger in '82.

which has one end connected to the swingarm and the other to the frame via a short linkage rod. The new shock also has four-way adjustment for compression damping rather than rebound. Honda claims that adjustable compression damping—which can be varied to suit different tracks, riding styles and rider weights—is more useful than adjustable rebound damping, which needs to be changed only to suit different springs and preloads.

Frame:

To quicken the CR's steering while retaining good straight-line stability, Honda has reduced the 250's steering angle by two degrees (to 27.5), reduced the trail 16mm (to 108mm) and increased the sidewall base 5mm. The Honda's tapered-collar steering-head bearings have their rollers inclined more vertically than last year's to make the bearing rotate less freely, giving the same basic effect as a steering damper.

Wheels:

The CR has a double-leading-shoe front brake. The front hub's spoke flanges, like those at the rear, have been re-angled to permit a less-radical bend in the hooked ends of the spokes. A straight-pull cable operates the rear brake.

Details:

The Honda has an enlarged airbox and a slightly smaller filter to prevent the element from touching the sides of the box. The filter is also held together with better glue to prevent separation that occurred on last year's CR. A new gas tank is shorter, taller in front and narrower at the rear to allow the rider to slide further forward.



Kayaba fork has three adjustments

To fine-tune compression damping.

Kawasaki KX250

Engine:

Top End: The KX250 is the only Japanese 250 motocrosser to retain air-cooling for 1982. Kawasaki also continues to use the Electrofusion process (employing high-voltage electricity to vaporize special steel wires inside the aluminum cylinder) to produce a hard-wearing cylinder bore surface. But because Kawasaki wanted much stronger midrange power for the '82 250, everything else in the cylinder is all-new. The intake port is much wider and bridged, and is fed by an eight-fiber-petal reed valve that replaces last year's six-petal unit. Two new passages connect the intake directly with the two rear (of four) transfers, and additional fuel reaches the crankcase through a port in the piston skirt and two small passages machined down through the cylinder-mounting flange.

To further improve midrange power, but at the expense of some high-speed performance, Kawasaki has slightly retarded the timing of the new motor's four transfers and bridged booster port. And the new central-exit exhaust port is also slightly more retarded than on last year's KX; but the eyebrowed exhaust-port window now is much wider and requires a central bridge to prevent ring-snagging. And there are two booster exhausts located above the front transfers to channel additional gas into the main exhaust passage.

Further boosting the midrange is the ignition timing, which has been retarded three degrees to 14 degrees BTDC. And by using a flywheel-magneto CDI rather than last year's inner-rotor ignition,

Kawasaki has increased the flywheel inertia to smooth the new KX's response to the stronger midrange power.

Kawasaki also claims that the KX gets a power boost from a more free-flowing airbox and a smaller filter element that does not touch the airbox sides like on last year's bike.

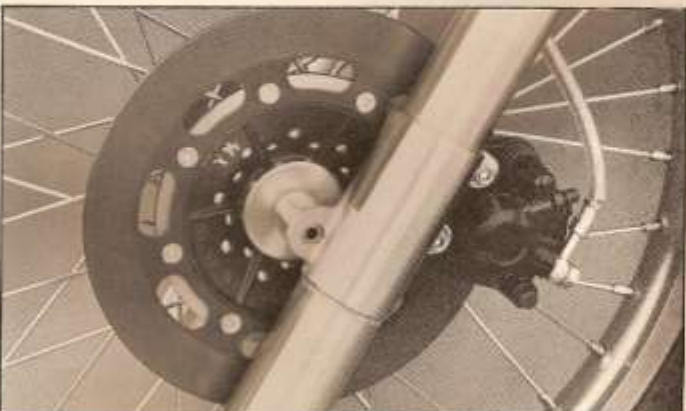
Drivetrain:

Unchanged straight-cut primary gears transmit power through a 13-plate clutch. The seven friction plates now have angled slots rather than last year's radial slots (twon the cork inserts to improve lubrication of the plates. The 10 pinions and the shifter mechanism inside the five-speed gearbox are unchanged.

Suspension:

Front: The KX250 uses Kayaba's latest 43mm fork with extruded aluminum sliders and axle bosses heat-shrunk onto the tubes. Kawasaki claims the new fork weighs just over one pound less than last year's 38mm forged-tube fork.

Rear: A new aluminum swingarm and steel rocker arm, both of box-section design, are claimed to increase strength and reduce weight; but more importantly, they provide a new rising-rate geometry that previous Uni-Traks lacked. The four-way-adjustable (for rebound damping only) Kayaba shock now features an aluminum top mounting eye and aluminum spring-preload adjusters to save weight over last year's steel pieces. A larger-volume remote reservoir is now fitted to improve cooling. Zerk fittings



KX front disc is the first to stop a Japanese production 'crosser

Sintered-metal pads and hardened-steel rotor make a powerful pair.

and a larger bearing area inside the rocker-arm pivot are claimed to increase suspension-linkage life.

Wheels:

Kawasaki is the first Japanese company to fit a disc brake to a production motocrosser. The hydraulic system is claimed to weigh 12 ounces less than last year's mechanical drum brake. A single-action hydraulic caliper presses a sintered-metal puck against a specially hardened steel rotor. A smaller rod-operated drum rear brake is used on the new KX. Both hubs are now laced to Takasago, rather than DID, rims to reduce weight and increase strength.

Frame:

The new KX chassis was completely redesigned to accommodate the centrally lo-



Kawasaki's new rear hub

Not enough power in the wet or dry.



Easily accessible pancake filter

Smaller than before to flow more air.



Booster exhausts above the transfers

Adding a little exhaust port area.

cated exhaust pipe and the rising-rate rear suspension. Kawasaki also has altered the steering geometry to improve steering response; but, contrary to popular practice, it has *increased* rake two degrees to 30 degrees, *increased* trail 9mm to 129 mm and *shortened* the wheelbase to 1506mm at the mid-adjustment point.

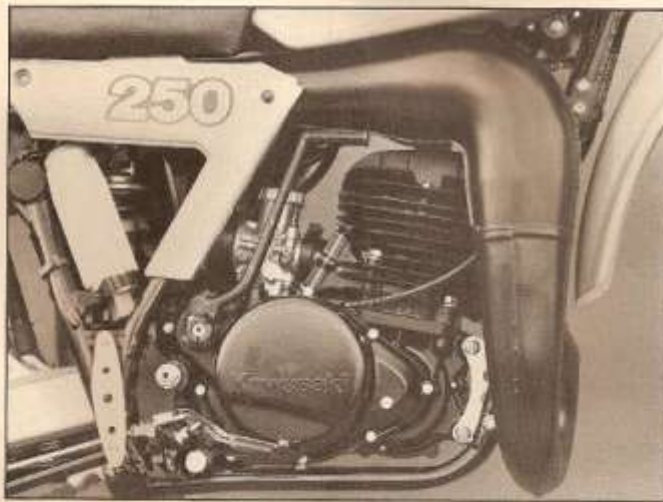
Details:

The new KX250 has numerous redesigned controls including: softer handgrips, dog-leg rather than straight levers, a side-pull throttle, a stronger kickstarter, steel rather than aluminum footpegs and handlebars that are no longer rubber-mounted in the triple clamps. Kawasaki now bolts a kickstand to the KX rather than using a hook-on stand. Bridgestone M22 tires replace last year's M20s. Harder-rubber chain rollers no longer use needle-roller bearings.



Hydraulically operated front brake

The master of all conditions.



A new air-cooled cylinder bolts to last year's KX bottom end

Designed to work with no concessions to liquid-cooled trends.



New Uni-Trak suspension geometry

Rising spring/damping rates.

Suzuki RM250

Engine:

Top End: The RM250Z is powered by a totally redesigned liquid-cooled engine with an oversquare bore-to-stroke relationship, changed from last year's 67 x 70mm layout to 70 x 64mm. The new cylinder runs cooler and thus allows the use of a NGK B8EGV plug (one step hotter than last year's). The RMZ is also jetted leaner, and while it uses all the regular Mikuni metering pieces, the 38mm carburetor has a flat-sided rectangular slide. Suzuki claims improved flow and better mid- and low-range response from the new design. Fuel from the carb is drawn through an unchanged eight-fiber-petal reed valve and then, by way of a bridged intake window in the cylinder wall and a separate passage directly into the crankcase, into the bottom end. Six transfers route fuel above the piston and its single Keystone ring, where the mixture is compressed at a ratio of 8.4:1 (0.3:1 higher than on the '81 RM) inside a hemispherical combustion chamber. For the first time on an RM250, burnt gases exit through a centrally located exhaust port. Suzuki claims that the more symmetrical position of the port in the otherwise unchanged barrel layout has increased power.

Bottom End: The RM's waterpump is gear-driven off the righthand end of the full-circle crank. The pump's seven-blade impeller forces 1000cc of coolant through a twin-radiator system pressurized to 15.6 psi. New crankcases still use a combined swingarm pivot/engine mount, but now there is only a single-bolt front engine mount.

Drivetrain:

Primary Drive: As with previous RMs, the Z-model uses straight-cut primary gears, but gear width is increased 1mm to 8.6mm. The clutch retains its four driven and five drive plates.

Gearbox: Second, third and fourth gears have been strengthened by adding a half-millimeter to their width. The only ratio changes are made to second and fifth gears. Second gear ratio drops numerically from last year's 1.750:1 to 1.687:1, while fifth is increased from 0.933:1 to 0.954:1.

Final Drive: The X-model's 14-tooth countershaft sprocket is retained on the Z-model, but the rear sprocket is reduced one tooth to 49 teeth.

Suspension:

Front: The RM250Z uses Kayaba's latest extruded-aluminum fork. Stanchion-tube



Suzuki builds the lightest motorcycle with fastest engine

Making it perhaps the best choice for the seasoned pro.



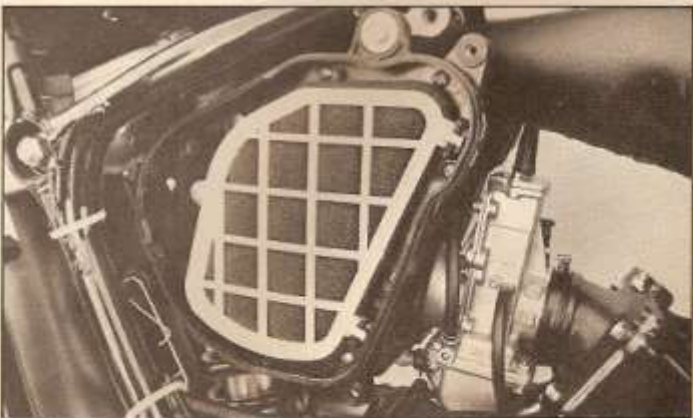
Twin Suzuki radiators

Converting heat into horsepower.



Less metal for your RM money

Cutting every corner to save weight.



Coarser outer-foam filters feed air to a rectangular-slide Mikuni

Finding more horsepower by fitting a square slide in a round venturi hole.

diameter is unchanged at 38mm, but wall thickness is increased for greater strength. Spring and damping rates are unchanged inside the new sliders, which are made from plain aluminum tubing with axle bosses heat-shrunk into place. Suzuki claims the new fork is lighter than last year's.

Rear: The Kayaba shock in Suzuki's Full Floater suspension system still sits vertically in the center of the frame, with its lower mount connected directly to the swingarm. The upper end of the shock connects to the swingarm through a cast-aluminum rocker and two vertical links that provide a rising rate of springing and damping. The shock's compression damping has been upped 25 percent while rebound damping is unchanged. And while the spring's rate is unchanged, its free length is increased 5mm, to 290mm, and preload is increased 2mm.

Frame:

The chromoly frame is basically unchanged. A fractionally reduced head angle (29.3 degrees vs. last year's 29.5 degrees) is caused by a larger-diameter Dunlop K300 rear tire. This year the single-downtube frame divides into two

smaller tubes to wrap around the pipe from the motor's central exhaust port.

Wheels:

Straight-pull spokes lace Takasago rims to a 150mm front hub and a 130mm rear hub, as they did in 1981. Both single-leading-shoe brakes also are unchanged.

Details:

All of the RM's plastic pieces are new. The fuel tank was redesigned to clear the dual radiators, but still holds 8.5 liters. Both fenders are more flexible and a new front number plate is square. The airbox has a redesigned drain system, and the outer layers of the dual-stage foam elements are made of coarser material. Controls have also received attention: the shift lever's tip now folds and the new 90-degree throttle assembly routes its cable close to the handlebar. Levers use two-piece clamps, and the underside of each new dog-leg blade is hollowed to reduce weight. Weight is also saved by the all-rubber mount for the ignition black box. And this year's seatcover and base have been redesigned to prevent the tearing that was common on the X-model.



Aluminum is used to craft the Kayaba shock, bell crank and swingarm

Using only the lightest materials to make the lightest bike.

Yamaha YZ250

Engine:

Top End: The YZ250J's liquid-cooled barrel contains four transfer ports assisted by one boost port. The upper edge of the YZ's intake window, which previously was straight across, now droops downward to reduce stress on the piston's rear skirt. A 38mm Mikuni carb feeds fuel through a six-steel-petal reed valve. The J-model's petals are thinner than the H-model's to improve fuel-flow at low rpm. The now-centrally located exhaust port has been altered to accommodate Yamaha's Power Valve System (YPVS). This innovation uses a mechanically operated special valve that alters the effective exhaust-port height in relation to engine speed, thereby broadening the YZ's powerband.

No gasket is used between the machined surfaces of the barrel and head; two large O-rings, however, seal in coolant as it flows past the head/barrel joint. From the cylinder head, the 1000cc of distilled water and anti-freeze are pumped to a triple-clamp-mounted radiator through sealed passages in the steering head, triple clamps and the frame's front downtube.

Drivetrain:

Primary Drive: The YZ250J uses straight-cut primary-drive gears, rather than the helical type used on previous YZs, to reduce driveline power losses. To prevent clutch-plate breakage, the J-model plates have wider tangs engaging in correspondingly wider slots in the clutch basket. Seven aluminum drive plates replace last year's six steel discs to save weight and provide more friction area.

Gearbox: Gear pinions have been strengthened with improved heat treatment. A lighter detent spring reduces the amount of pedal-pressure needed for gearshifting.

Final Drive: A change from 48/14 to 45/13 gearing has fractionally raised the final-drive ratio.

Suspension:

Front: A new Kayaba fork is used in front. Its straight-aluminum-tube sliders have axle bosses heat-shrunk into place. The new fork is less-expensive to manufacture than the old forged unit. Unchanged straight-wound springs are used inside the 43mm stanchion tubes. Compression damping is decreased, in part due to a change from 10-weight fork oil to 7.5-weight, and in part due to a change in valving. Much smaller damping orifices produce an overall increase in rebound-damping rates in spite of the lighter oil.



Shorter shock and aluminum bell crank
Give the YZ rising-rate suspension.

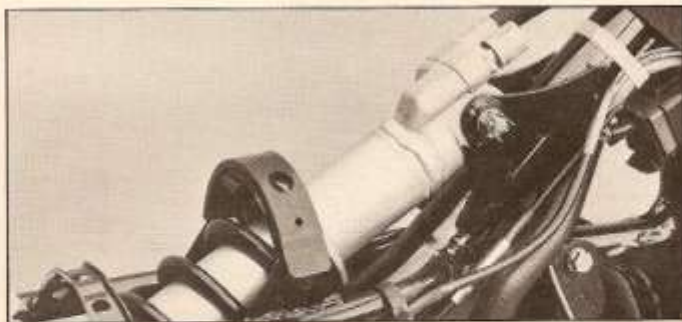


Double-leading-shoe front brake
Shorter stops for the YZ250.

Rear: Those front-suspension changes were made to better-suit the YZ's new Monocross rear suspension. A shorter de Carbon shock and an extruded (rather than square-tubing) aluminum swingarm are connected by an L-shaped aluminum bell-crank that pivots on needle-roller bearings. Needle bearings are also used between the bell-crank and swingarm. The additional pieces in the Monocross suspension are claimed to make it 2.3 pounds heavier than the Monoshock design. But the new system does provide rising rates of springing and damping and, for the first time, 10-way-adjustable compression damping.

Frame:

The single-backbone frame's 27.5-degree



Yamaha's new Monocross shock has 10-way-adjustable compression damping
Just lift the tank and dial a ride on the most adjustable bike in town.



The latest YZ250 motor is liquid-cooled and Power-Valved
Yamaha uses every trick in the updated motocross book.

head angle is one degree steeper than last year's. To maintain straight-line stability with the quicker steering geometry, the J-model's wheelbase is almost an inch longer than the H's. A single front downtube splits into two engine-cradle tubes much closer to the steering head to allow room for the central-exit exhaust pipe. Rear frame tubes with greater wall thickness and larger diameter handle the higher stress loads imparted into the Monocross linkage pivot.

Wheels:

The 250YZ has adopted the double-leading-shoe front brake previously used on the Open-class YZ. The tab that locates the front backing plate to the fork slider has been positioned horizontally to make wheel installation easier. A new rubber

compound and taller knobs are claimed to give the IRC tires better traction on loamy tracks.

Details:

A seat that extends almost to the gas cap allows the rider to sit further forward more comfortably in turns. Higher-quality foam increases the seat's service life. Better airflow and easier filter access are the two benefits of a larger-volume air-box. Foam inserts prevent mud buildup in the swingarm's open cavities. Alloy brake arms replace steel items on both hubs. The rear brake lever has a more-compact folding-tip pivot. Last year's YEIS canister is omitted from the YPVS motor, although the inlet manifold and canister from a YZ490 are a bolt-on replacement.

The 250 Motocrossers: Which Will Win?

• With machines as hot as the 250cc motocrossers, simply testing four bikes against each other isn't enough. They have to be tested against different tracks and different riders, matched against mud, sand and clay with the stopwatch carefully watching over each machine. And then, after they've been raced, thrashed and dragged through every condition, performance can be compared and the winner finally selected.

But no machine can do everything. An asset in the sand can prove to be a detriment in the mud, so our goal was to find which machine strikes the most suitable balance—a machine capable of winning on any track. And because we wanted to examine how the bikes, not the tires, differ in performance, each bike received a new set of Metzeler tires at the outset of the test. In the past, Metzeler tires have given us top-rate traction no matter where they were taken. And with five different tracks on the lineup, consistency would be important.

A rainstorm provided the test-mud for the first track. In that power-robbing slush, one thing immediately became clear: The Suzuki easily is the fastest of the four. Straight-line dragraces never see it anywhere but in front—way in front. But while horsepower is the RM's greatest advantage when the gate drops, it can make the machine a handful in slimy turns. As the Suzuki comes up from its so-so midrange, it suddenly hits a concentrated dose of high-rpm power and often finds itself with more horses than it knows what to do with. The bike wants to squirm sideways so that sticking to one line can be tough.

The Kawasaki is another hard-hitter, but in a different way. If you were to take the RM's powerband, move it 1000 rpm lower and then add a touch more flywheel, you'd have a KX replica. The Kawasaki is more controllable because it hits less abruptly and it hits lower down the scale. The power comes on early and builds quickly. But instead of continuing into the upper ranges it suddenly drops off. The KX's early top-out point gives the RM a big edge if both machines have traction.

The Honda and Yamaha have less trouble hooking up than the Suzuki. Both bikes pump similar amounts of power over

broad rpm ranges. But the Yamaha's motor has a midrange flatness that makes it less potent than the fast-revving CR. Both bikes still are capable of low-rpm chugging when necessary, and they're easier to sling through turns that require precise throttle control, making them the bikes to have when the going gets wet.

Mud also lends the opportunity to learn about brake performance and waterproofing. One day of slushcross can put weeks of wear on shoes and, in the case of the Kawasaki, pads. At first we were skeptical about the KX's ability to stop when its front disc got wet, but it consistently provided the best stopping power of the bunch. Water doesn't affect it, neither does mud or grit. Lever feel always is the same, and once you learn how much pressure it takes to stop the KX, you're never surprised by anything the brake does. Unfortunately, the Kawasaki's rear brake doesn't rate as well. In fact, it's the worst of the four. As soon as it saw mud, the brake went away and never fully came back, even after we cleaned and sanded the shoes. The Suzuki's brakes aren't much better at either end. They will stop the bike, but they require more effort than they should. The Honda and Yamaha were the top stoppers. Both have strong double-leading shoes in front and healthy rear brakes that always worked, wet or dry.

Other impressions began to change as the mud dried up and we rode some deep sand. We learned that the power that had made the Suzuki hard to handle in the mud is ideal for blasting through sand. And both the RM and KX show an aptitude for tight turns. The Kawasaki, especially, gives its rider the feeling that he can touch handlebar to earth without any ill consequences. But the KX pays for its cornering ability in the straights. It lacks stability and wanders over the surface of the sand at high speed. The Suzuki also has a fifth-gear sand twitch, but to a lesser degree.

The Yamaha has no such problems. Its geometry is suited more for sand riding than any of the others. It feels stable through the straights and predictable in the turns, even though it doesn't have the tight-cornering manners of the RM or KX. Its slow-revving power, however, isn't as

sand-savvy. The engine often gets dragged down because it can't rev freely enough to keep from laboring in the sand. The Honda, with its light flywheel, is able to break free and spin past the lagging Yamaha. The CR is quick-revving like the KX and the RM, and stable-handling like the YZ, though not as extreme in either case.

The bikes stack up the same way on hard-packed ground. The Kawasaki and Suzuki are still the top turners, and the Honda and Yamaha are still the most stable. But suspension then becomes a more important factor in the equation. At first we felt the Suzuki was better than any of the others in its ability to smooth the track. The Full Floater glides over almost everything while the Yamaha is too soft, the Kawasaki too harsh and the Honda has a tendency to skip around. Even with the optional stiff spring on the YZ, it's the softest of the four bikes. Its ride over medium and small bumps is plush, but in the big stuff the YZ becomes hard to handle. The fork never presents any problems, and in fact it works exceptionally well but it's limited by being matched to a rear end that seems always to be in the final 25 percent of its travel.

The Kawasaki's chief problem is the opposite. Even though the machine's handlebar-seat-peg relationship is tight (Kawasaki claims it was designed around a 5-foot-9-inch rider, and testers over six feet complained that the KX was cramped), the Kawasaki is sprung for a heavy rider—over 190 pounds. Relieving the preload doesn't solve the problem, but it makes the KX easier to live with on the small stuff. This is the first year for Kawasaki's rising-rate Uni-Trak design and the progression curve seems too radical. What feels good sitting on the machine is too stiff on the track. And the fork is the same way, at least as it's delivered. We changed the oil from the stock 10-weight to a half-and-half mixture of 5- and 10-weight. The fork smoothed out considerably although it still was slightly harsh.

The Honda has the smoothest suspension of the four—even though that wasn't the case initially. The Pro-Link had a tendency to kick unpredictably, as if it were either sprung too heavily or didn't have enough rebound damping. But it would still bottom on medium-sized whoops. It turned out that the bike was improperly set-up for a 165-pound rider. Honda recommends that the preload be set so the weight of the rider uses approximately 100mm of



the rear-wheel travel when he sits on the machine. Our CR was delivered with considerably more preload. Once readjusted, however, the Honda became plush, and no longer kicked back. With its compression damping set on either position two or three according to rider preference, the Honda works extremely well, even though it's still soft for heavy riders. The stiffer Suzuki, previously the standard in rear suspensions, feels better when it hits *really* big whoops, but it can't touch the Honda for smoothness around most of the track.

Both the CR and the RM have top-rate forks as well. In performance, they are equals. Both are Kayaba-made and are similar in feel. The CR's front end, though, is more adaptable to different conditions. The compression damping can be set independently of the rebound damping, and the rider can adjust the fork in the pits with a small flat-bladed screwdriver. The three settings on the Honda's fork can be used to dial-in the CR to almost any rider or track condition.

Even with a strong suspension advantage over the others, the Honda wasn't the odds-on favorite to turn the fastest lap time when the stopwatch came out. Most bets were on the Suzuki. And, as expected, most riders came back feeling the Suzuki had given them their quickest times. Its power edge, we felt, was more than enough to deliver the hottest laps. The Kawasaki also made its riders feel quick because its engine is so easy to use. We all believed we had wasted less time by making fewer mistakes. The Honda and Yamaha didn't receive such good reviews. Both machines felt stable in the straights but clumsy in the turns. Riders came back feeling that they had *raced* the RM and KX around the track while feeling that they had only ridden fast on the CR and YZ.

But when the time came to compare our impressions with hard numbers there were surprises. The Honda was the quickest for all the testers. On a medium-rough track, the CR was faster by a consistent margin, with the order of the others varying de-

pending on the rider. A track that was slightly rougher provided the same results: The Honda was always quickest. The RM closed the gap and moved into a solid second place, but we still agreed that the RM felt faster.

Reasons for the difference between opinion and fact can be found in the CR's stability and suspension. On the Honda, the rider feels secure, a sensation that most riders don't associate with red-hot lap times. The CR's edge-of-control point is higher than on any of the other machines.

So, if you haven't already guessed, the Honda comes out on top. It's an easy bike to go fast on. If you're a super-Pro and all four companies are offering you contracts to campaign stock machinery in the nationals, the Suzuki might be a better choice. At that level you'll be more able to use the RM's extra power and stiffer suspension. But if you're down here with the rest of us, the Honda will go faster and cost you less effort. And that's a combination that *will* win on any track. —Ron Lawson

Ride Review

• The seat of my pants isn't always the best judge of a competitive motorcycle. My nerve endings normally can pick out a winner, but when it comes to choosing between four very different motocrossers that are all so close, the seat of my pants needs a little help. I find that I have to use a stopwatch.

If I hadn't checked lap times I'd have picked the Kawasaki as the slowest bike in the group. But the KX only feels slow; its strong and tractable motor makes the bike very predictable.

In contrast, the RM feels like an obvious winner. My nerve endings were left tingling by the powerful motor and the quick-steering chassis. But the stopwatch showed that it wasn't the fastest.

Neither was the Power-Valved Yamaha, at least under the split-second eye of a stopwatch. But the slow-steering bike felt good in the fast sections, and before I saw the lap times I thought I might have found a surprise winner.

The CR250R didn't do much for my nerve endings. It never felt awesomely fast, and it even felt a little clumsy in tight turns. But that just proves the fallibility of seat-of-the-pants testing: the stopwatch showed the CR250R was consistently the fastest of the bunch.

—David Dechurst

• I came away from this 250cc dirt-off having learned three significant things: 1) that I could go just about as fast on either the Honda or the Suzuki; 2) that for reasons of personal taste and riding style, I probably would choose the Suzuki were I to buy one of these bikes for my own use; and 3) that liquid-cooling had absolutely no effect whatsoever on the final outcome of this test.

See, overall, the only air-cooled motocrosser in this comparison finished either third or last, depending upon which tester's opinion you solicit. But the irony is that the motor had nothing to do with that poor showing. In fact, on certain tracks under certain riders, the KX posted lap times that were competitive with those of the two fastest bikes, usually the CR and RM, and it occasionally even beat the RM's times. And even when the KX turned the slowest laps on the four, we all agreed that the chassis was to blame, not the motor.

This confirms, then, what we've suspected all along: that on these bikes, at least, liquid-cooling is more sales hype than it is performance-booster. I'm sure that 250-class motocross bikes can benefit greatly from being liquid-cooled. Can. But judging by the Kawasaki, the three you see here haven't. —Paul Dean

Honda CR250R



SPECIFICATIONS:

IMPORTER: American Honda Motor Company
100 West Alhambra Boulevard
Serrano, California 90247

CATEGORY: motocross

SUGGESTED RETAIL PRICE: \$2049

ENGINE	
Type	liquid-cooled two-stroke vertical single
Port arrangement	one reed-valve controlled intake
Port	two transfer, one leader transfer, one bridged exhaust
Bore and stroke	60.0mm x 72.0mm
Displacement	240.0cc
Compression ratio (corrected)	7.4:1
Carburetor	one 37mm Mikuni slide/needle jet filter
Ignition	washable solid-state transistor
Lubrication	pre-mixed fuel and oil
Starting system	primary kick
Ignition	internal-rotor magneto CDI
Charging system	none

DRIVETRAIN			
Primary drive	straight-cut gears; 2.88:1 ratio		
Clutch	wet multi-plate		
Final drive	*520 chain (5/8 in. pitch, 1/4 in. width); 2.85:1 (34/14) ratio		
Gear			
Interval	Overall	MPH per 1000 RPM	
I	2.800	19.786	4.0
II	1.471	16.170	4.8
III	1.150	12.841	6.3
IV	0.925	10.458	7.8
V	0.813	9.157	8.8

SUSPENSION/WHEEL TRAVEL	
Front	30° spring, 43mm diameter tube diameter
Rear	2-way adjustable compression damping; 11.4 in. (290mm)
Front	20.1 in. (510mm) spring preload adjustment
Rear	4-way adjustable rebound damping; 12.0 in. (305mm)

BRAKES	
Front	disc, double-leading shoe
Rear	disc, single-leading shoe, straight-pull cable operated

TIRES	
Front	3.00 x 21 Bridgestone Motocross M21
Rear	5.10 x 18 Bridgestone Motocross M22

DIMENSIONS AND CAPACITIES	
Weight	228 lbs. (103kg)
Weight distribution	47.9% front, 52.1% rear
Wheelbase	58.8 to 59.9 in. (1494 to 1522mm)
Seat height	34.2 in. (870mm)
Handlebar width	32.7 in. (830mm)
Yokebar height	18.8 in. (477mm)
Ground clearance	13.8 in. (351mm), at angle; 14.0 in. (354mm), from wheel trail
Steering head angle	27.4 degrees from vertical
Frame	4.30 in. (109mm)
Fuel tank	tubular aluminum steel, single front downpipe
Approximation	capacity, 2.2 gal. (8.5L), no reserve

PERFORMANCE	
Top speed (observed)	74 mph (119 km/h)

WARRANTY: none

AVAILABLE COLOR: red only

All weights and measurements are taken with machine oil and fuel tank empty.

Kawasaki KX250



SPECIFICATIONS:

IMPORTER: Kawasaki Motor Corporation
2009 East Edinger Avenue
Santa Ana, California 92711

CATEGORY: motocross

SUGGESTED RETAIL PRICE: \$2075

ENGINE	
Type	two-stroke vertical single
Port arrangement	one reed-valve controlled intake
Port	two transfer, one bridged transfer transfer
Bore and stroke	one bridged exhaust; 60.0mm x 72.0mm
Displacement	249.0cc
Compression ratio (corrected)	8.4:1
Carburetor	one 38mm Mikuni slide/needle jet filter
Ignition	washable solid-state transistor
Lubrication	pre-mixed fuel and oil
Starting system	primary kick
Ignition	synchro-magneto CDI
Charging system	none

DRIVETRAIN			
Primary drive	straight-cut gears; 2.750:1 ratio		
Clutch	wet multi-plate		
Final drive	*520 chain (5/8 in. pitch, 1/4 in. width); 3.429:1 (38/11) ratio		
Gear			
Interval	Overall	MPH per 1000 RPM	
I	2.133	20.114	3.9
II	1.688	15.911	5.0
III	1.369	13.085	6.1
IV	1.000	10.007	8.2
V	1.000	8.425	8.4

SUSPENSION/WHEEL TRAVEL	
Front	damping, 43mm diameter tube diameter
Rear	11.2 in. (284mm)
Front	0.4 in. (10mm) spring preload adjustment
Rear	4-way adjustable rebound damping; 11.3 in. (287mm)

BRAKES	
Front	single-action hydraulic caliper, 9.5 in. (242mm) disc
Rear	disc, single-leading shoe, rear-operated

TIRES	
Front	3.00 x 21 Bridgestone Motocross M23
Rear	5.10 x 18 Bridgestone Motocross M22

DIMENSIONS AND CAPACITIES	
Weight	220 lbs. (100kg)
Weight distribution	47.0% front, 53.0% rear
Wheelbase	58.8 to 59.7 in. (1494 to 1516mm)
Seat height	37.4 in. (950mm)
Handlebar width	33.0 in. (838mm)
Yokebar height	17.2 in. (437mm)
Ground clearance	11.0 in. (280mm), at angle; 11.0 in. (280mm), from wheel trail
Steering head angle	30.0 degrees from vertical
Frame	5.68 in. (145mm)
Fuel tank	tubular aluminum steel, single front downpipe
Approximation	capacity, 2.4 gal. (9.1L), no reserve

PERFORMANCE	
Top speed (observed)	71 mph (114 km/h)

WARRANTY: none

AVAILABLE COLOR: green only

All weights and measurements are taken with machine oil and fuel tank empty.

Suzuki RM250Z



SPECIFICATIONS:

IMPORTER: U.S. Suzuki Motor Corporation
3251 East Imperial Highway
Irvine, California 92613

CATEGORY: motocross

SUGGESTED RETAIL PRICE: \$2000

ENGINE

Type liquid-cooled two-stroke vertical single
Valve arrangement one head valve controlled intake,
air transfer, one exhaust
Bore and stroke 70.0mm x 64.0mm
Displacement 244.3cc
Compression ratio (suggested) 6.4:1
Cooling system one 35mm Mikuni rectangular side/heatsink
for filter twin dual-stage, washable steel foam elements
Lubrication pre-mixed fuel and oil
Starting system primary kick
Ignition internal rotor magneto CDI
Charging system none

DRIVETRAIN

Primary drive straight-cut gears, 2.72:1 ratio
Clutch wet, multi-plate
Final drive #520 chain (5/8 in. pitch, 1.4 in. width),
3.50:1 (43/14) ratio

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.677	19.625	3.0
II	1.668	16.106	4.8
III	1.265	12.914	6.0
IV	1.105	10.600	7.3
V	0.980	8.112	8.6

SUSPENSION/WHEEL TRAVEL

Front air-spring, 26mm stanchion tube diameter/
19.8 in. (279mm)
Rear full floater, 25mm spring preload adjustment,
4-way adjustable rebound damping, 12.2 in. (312mm)

BRAKES

Front drum, single-leading shoe
Rear drum, single-leading shoe, straight pull cable-operated

TIRES

Front 3.00 x 21 Dunlop Sports K490
Rear 3.10 x 18 Dunlop Sports K990

DIMENSIONS AND CAPACITIES

Weight 217 lbs. (98kg)
Weight distribution 47.8% front, 52.2% rear
Wheelbase 57.2 to 58.3 in. (1460 to 1483mm)
Seat height 29.0 in. (740mm)
Handlebar width 32.0 in. (813mm)
Footpeg height 16.3 in. (414mm)
Ground clearance 14.0 in. (356mm), at engine cradle
Steering head angle 29.3 degrees from vertical
Front wheel trail 4.80 in. (122mm)
Frame tubular chromoly steel, single front downtube
Fuel tank plastic, 2.2 gal. (8.3), no reserve
Instrumentation none

PERFORMANCE

Top speed (estimated) 77 mph (124 km/h)

WARRANTY: none

AVAILABLE COLOR: yellow only

All weights and measurements are taken with machine
oil and fuel tank empty

Yamaha YZ250J



SPECIFICATIONS:

IMPORTER: Yamaha Motor Corporation, USA
6555 Katoia Avenue
Cypress, California 90630

CATEGORY: motocross

SUGGESTED RETAIL PRICE: \$2175

ENGINE

Type liquid-cooled two-stroke vertical single
Valve arrangement one head valve controlled intake,
four transfer, one booster transfer
Bore and stroke 70.0mm x 64.0mm
Displacement 246.3cc
Compression ratio (suggested) 6.4:1
Cooling system one 35mm Mikuni side/heatsink
for filter one 35mm Mikuni side/heatsink
Lubrication pre-mixed fuel and oil
Starting system primary kick
Ignition internal rotor magneto CDI
Charging system none

DRIVETRAIN

Primary drive straight-cut gears, 2.825:1 ratio
Clutch wet, multi-plate
Final drive #520 chain (5/8 in. pitch, 1.4 in. width),
3.462:1 (45/13) ratio

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.245	19.875	4.1
II	1.813	16.460	4.8
III	1.412	12.826	6.2
IV	1.243	10.285	7.7
V	0.957	8.690	9.2

SUSPENSION/WHEEL TRAVEL

Front air-spring, 26mm stanchion tube diameter/
13.0 in. (329mm)
Rear Monocross, 25mm spring preload adjustment,
10-way adjustable compression damping,
24-way adjustable rebound damping, 11.0 in. (279mm)

BRAKES

Front drum, double-leading shoe
Rear drum, single-leading shoe, not operated

TIRES

Front 3.00 x 21 IRC Motocross 2 MHO
Rear 3.10 x 18 IRC Motocross 2 MHO

DIMENSIONS AND CAPACITIES

Weight 220 lbs. (100kg)
Weight distribution 48.5% front, 51.5% rear
Wheelbase 59.8 to 59.9 in. (1520 to 1523mm)
Seat height 27.8 in. (706mm)
Handlebar width 23.0 in. (583mm)
Footpeg height 16.0 in. (406mm)
Ground clearance 12.5 in. (318mm), at engine cradle
Steering head angle 27.6 degrees from vertical
Front wheel trail 4.88 in. (124mm)
Frame tubular chromoly steel, single front downtube
Fuel tank plastic, 2.2 gal. (8.3), no reserve
Instrumentation none

PERFORMANCE

Top speed (estimated) 80 mph (129 km/h)

WARRANTY: none

AVAILABLE COLOR: yellow only

All weights and measurements are taken with machine
oil and fuel tank empty

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