COMPARISON TRACK TEST:

Can-Am 500MX vs. Honda CR480R vs. Husqvarna 500CR vs. Kawasaki KX500 vs. KTM MC 495 vs. Maico 490 vs. Suzuki RM500 vs. Yamaha YZ490

OPEN-CLASS MX ROOST-OFF

An eight-dimensional view of the best motorcycle for the age of the megacrosser.

BY RON LAWSON

When moto-historians write the History of Motocross in the Open-Class Book of Books, 1983 will be entered in bold type. This will be noted as the year in which every major manufacturer of motocross machinery took more than a passing interest in 500cc competition. The fact that far fewer Open-class motocrossers are sold than those in any other displacement class seems to have been forgotten. This year, more than ever before, the overriding concern of the manufacturers is the question of who can build the largest, most powerful and *best* motocrosser of all time.

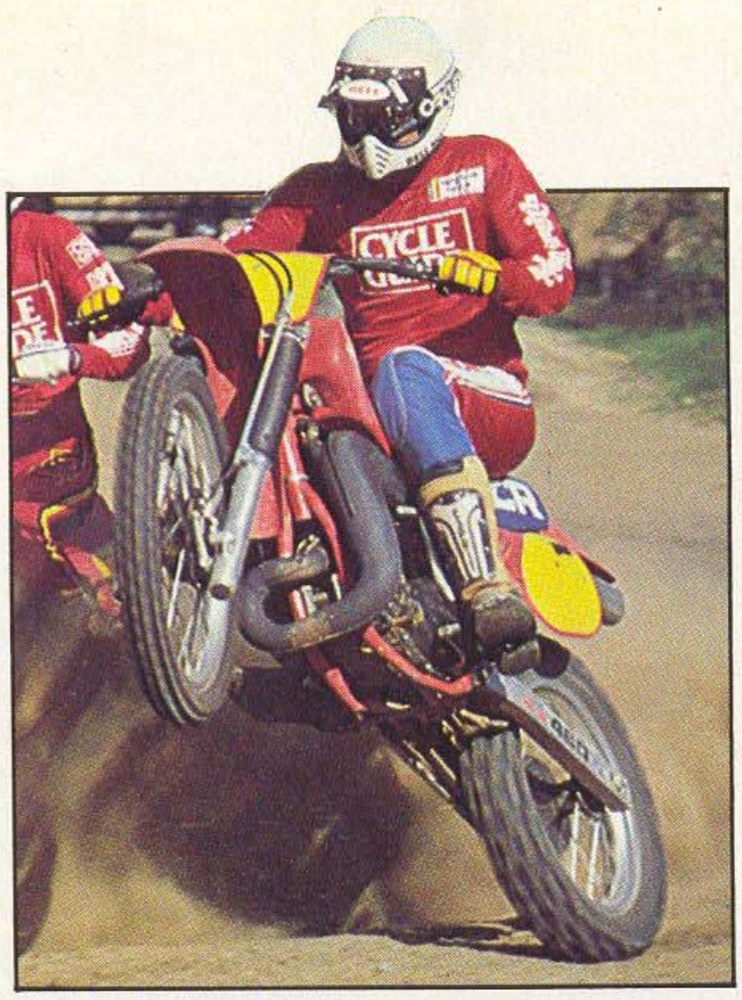
For proof, you need look no further than the machinery filling 1983 start lines. You'll see a Kawasaki where none existed last year. And it's a big Kawasaki, too—the largest-displacement two-stroke single available. And right next to that, you'll see two other all-new machines: a Can-Am, with its

Continued

482cc Austrian Rotax engine and British-made chassis, and a completely redesigned Maico 490.

Other companies, like Husqvarna and Suzuki, have used an existing model as the basis for their participation in this Year of the Megacrosser. Of course, both machines are larger in displacement than their predecessors of one year ago. In Husky's case, a late-'82 500CR hit the showrooms just long enough to act as an appetizer for a reframed and resuspended '83 model. And Suzuki retained enough from its RM465 to assure that the new RM500 will be a contender for the Open-class crown for the second year in a row.

Honda, KTM and Yamaha have equipped their Open-class entries with new frames and suspensions. Weight-loss was a high priority on the YZ490 and the CR480R, both of which have trimmed off enough fat to tip the scales as the two lightest Open bikes of the year.



With so much happening in the big-bore world, we couldn't resist the temptation to attack the Open front face-on. We had to learn which of the new breed of Open-classers really is the best of all-time, and there was only one way to do that: a comparison. But not just any comparison, for it would have to be the largest, most thorough mass-motorcycle examination ever attempted. It would take months of riding, evaluating, adjusting and racing, and it would have to be performed on every type of terrain imaginable. And the test would have to tell us, without any doubt or reservation, which bike is the most likely to win.

So we rode, raced, tested and learned. We used eight machines, 10 tracks and 10 riders. It was impossible, we thought, for any one bike to be perfect for all the riders in all the conditions. We were just looking for the best compromise. But we found more than we bargained for, because several of these Open missiles are anything but compromises. One in particular, in fact, takes Open-crossing to a high place it has never been before. ●

WHICH WILL WIN?

Horsepower can be a terrible disadvantage. Ask anyone who has spent time in the saddle of an Open-class motocrosser. Turning is more difficult, racing is more physically demanding, and even suspension has to work harder when it's hooked up to big-bike horsepower. That's why the quickest lap times at most tracks are in the 125 and 250 ranks.

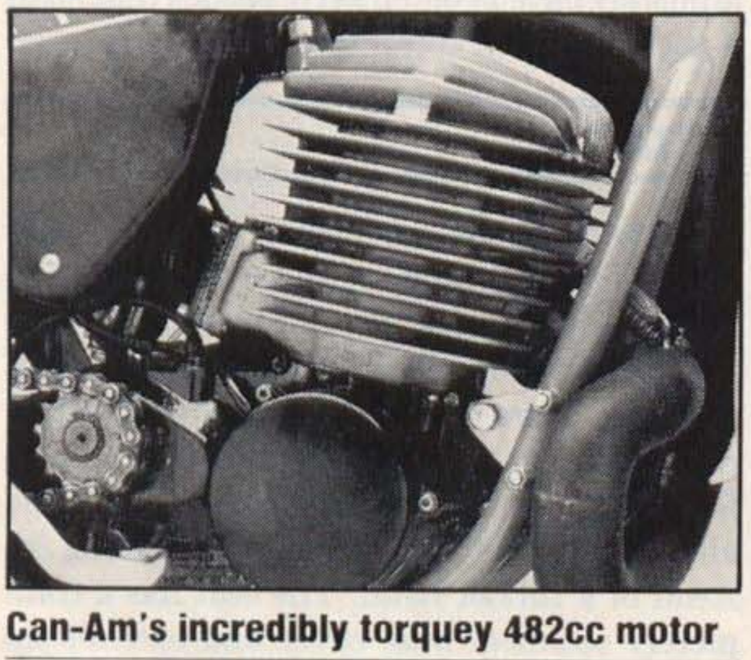
Still, the attraction of extreme power, as impractical as it is, remains a difficult-to-resist narcotic. But does Open-class racing really have to be such hard work? Among these eight motocrossers that come from so many different parts of the world, isn't

TECH INSPECTION:

Can-Am 500MX

ENGINE:

Aside from a few gearbox pieces, nothing about the 500MX engine was carried over from Can-Am's previous Open-class motor, the MX-6 400. That engine, last built in 1981, was a highly oversquare, 400cc unit that breathed through a 38mm Mikuni carb and a combination of both piston-port and case-reed induction. This new motor, however, is a perfectly square (85mm bore and stroke), 482.3cc torquer fed by a 40mm Mikuni through a conventional-style eight-petal reed valve in the cylinder. The remainder of the porting is just as straightforward: four main transfers, two on each side of the cylinder; two narrow boost ports extending upward from the top of the bridged intake port; and a large, oval exhaust port that empties into a left-side pipe fitted with an aluminum silencer. A Kokusan external-flywheel ignition supplies the sparks while adding to the rotational inertia of the crankshaft. Straight-cut gears pass the power through a large clutch into a drum-shifted gearbox that shares four of its five ratios (all but third) with the MX-6 400. A side-mounted airbox on the right gives easy access to its dual-stage element with just a quarter-turn of the cover's three Dzus fasteners.



Can-Am's incredibly torquey 482cc motor

Winner of the Open-class tractor-pull.

CHASSIS:

The 500MX's chassis is absolutely identical to those of the three other models in Can-Am's new MX line: the 125MX, 250MX and four-stroke Sonic MX. But there are no similarities whatsoever between this chassis and those on past Can-Ams. These new machines are designed and assembled (and the frames and swingarms manufactured) by Armstrong Competition Motorcycles in England rather than by Bombardier, Can-Am's parent organization, in Canada. Only the financing and the marketing strategy comes from Bombardier. The rest of the bike originates just about everywhere *but* in Canada. The Rotax-built motor is Austrian, the 40mm Marzocchi fork and Grimeca drum brakes are from Italy, the single rear shock is a Swedish Ohlins, the rims are by Akront of Spain, and the Dunlop tires, Renold chain and snow-white bodywork (fiberglass 2.5-gallon gas tank, plastic fenders and side numberplates) all are from England.

The Marzocchi fork provides 11.6 inches of travel up front, and the Quad Link rear suspension (similar in the design of its rising-rate linkage to Honda's Pro-Link) delivers an even 12 inches in the rear. The Ohlins shock is equipped with a 44-position damping-adjuster ring at its base that regulates both the compression and the rebound damping at the same time. The single-downtube frame and box-section swingarm are fabricated of Reynolds 531 (the British equivalent of American 4130 chrome-molybdenum) tubing, with a 28 degree steering-head angle and a lengthy average wheelbase of just over 60 inches.

Armstrong-designed Quad Link rear

With Ohlins damping-adjustable shock.

DETAILS:

As is rapidly becoming standard practice in motocross, the front of the seat extends up the rear of the gas tank. The control levers are by Magura, and the throttle is an Italian-made Domino assembly that can be popped open with a flick of the thumb, making cable-replacement a snap.

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there at least *one* design philosophy that successfully harnesses Open power? Or on the track are they all just mildly different, but impractical-as-ever, solutions to the Open-class problem?

Well, as usual, the answer isn't so clear-cut. But you can be assured that these motocrossers *are* different. There are so many differences, in fact, that it's easier to list their similarities.

For example, in handling characteristics, there are three very broad categories into which you can lump these eight machines. At one end of the scale there are the turners—bikes that are right at home in the confines of a tight corner, though they tend to be unstable in the open. That category includes the Suzuki, the Kawasaki, the Honda and, to a lesser degree, the Maico. At the other end of the chart are the straight-liners: the Yamaha and the Husqvarna. And somewhere in the middle

TECH INSPECTION:

Honda CR480R

ENGINE:

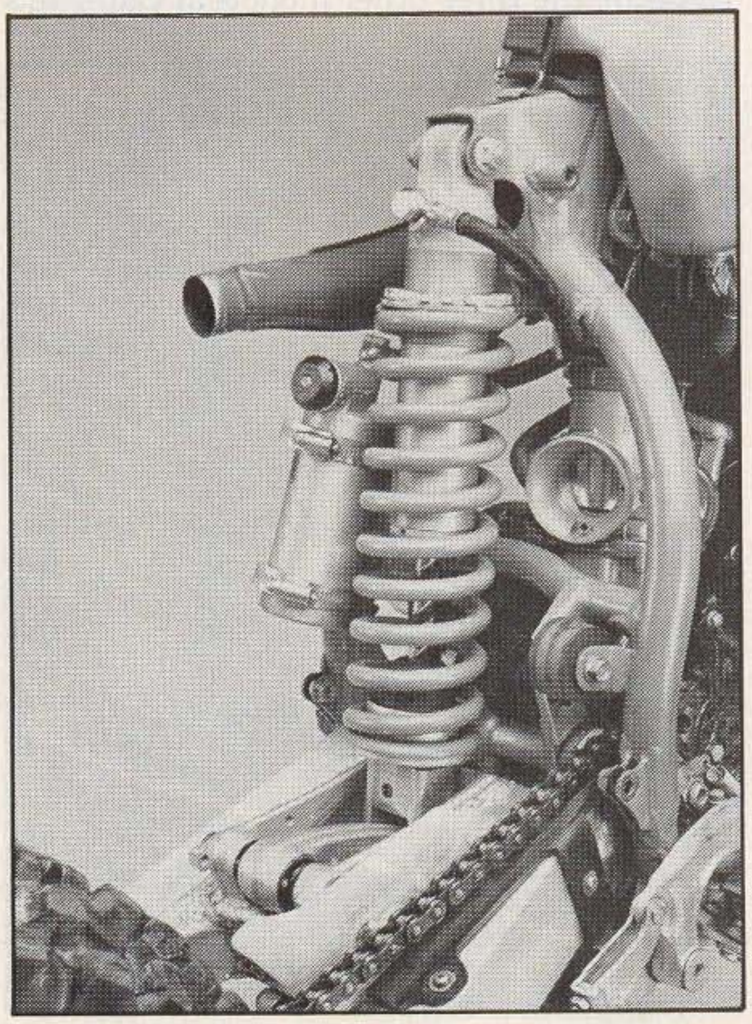
Don't look for any model-year changes in the power-producing elements of the 480's engine, for there are none. The light-flywheeled, highly oversquare (89mm bore, 76mm stroke) motor still is fed by a 38mm Keihin carb through a six-petal reed cage, and the shape and timing of all the ports are the same as on the '82 engine. The exhaust system differs slightly, but only so it can snake through the CR's new frame before terminating in a lightweight aluminum silencer.

Behind the powerplant, however, are some important changes, including a five-speed gearbox in place of the '82's four-speed. All of the individual ratios, including that of the primary drive, are new, resulting in a lower first gear and a taller high gear than on the four-speed. The clutch now uses thicker drive plates that contain more asbestos to resist slipping when hot. The clutch springs are stiffer and longer, and the clutch hub is now shock-damped with rubber cushions instead of steel springs. The addition of a fifth gear required the left-side crankcase to be 4mm wider; and since that also meant moving the clutch to the left, the straight-cut primary-drive gear on the crank had to be offset to mesh fully with the gear on the clutch.

CHASSIS:

Because of its added gearset, the new 480 engine weighs 1.5 pounds more than the old, but due to numerous chassis refinements the entire motorcycle weighs six pounds less. The box-section swingarm is extruded of 0.5mm-thinner-wall aluminum, and fabricating the steering stem, the kickstart lever and the rear-brake torque arm of aluminum helped make the Honda, at 226 pounds, the lightest Open-classer of all. The frame is new, incorporating motocrossing's quickest steering geometry (26-degree head angle, 3.86 inches of trail) and a detachable rear subframe that gives easy access to the new, lighter rear shock absorber.

That Showa shock is part of a Pro-Link suspension redesigned to be less progressive than the '81 or '82 versions. Last year's shock had only four-way-adjustable compression damping, but this year's has 12 compression *and* 20 rebound settings. And a decrease in the leverage ratio provided by the system's new all-aluminum linkage allows a lower-rate, lighter-weight shock spring. The 43mm Showa fork is a tad lighter, too, compared with last year's Kayaba fork, thanks to thinner-wall (2.6mm vs. 3.0mm) stanchion tubes. And whereas last year's fork had a three-position compression-damping adjuster in the bottom end of each slider, this year's adjusters have 14 detented positions that span a wider range of compression-damping rates.

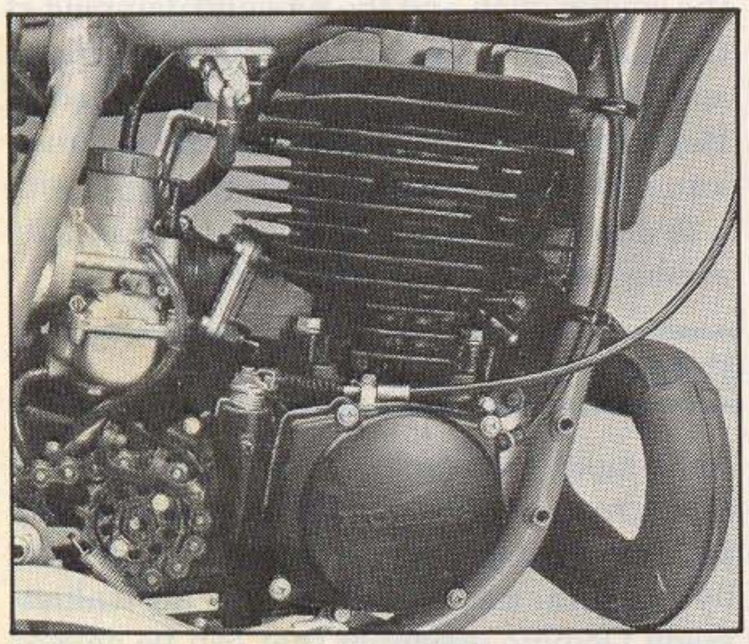


CR480R has quick-detach rear subframe

Shock maintenance made easier.

DETAILS:

Both wheel hubs are slightly narrower and lighter. But to compensate for the reduction in brake swept area, the double-leading-shoe front brake's linkage was recalibrated to give the rider more mechanical advantage. The rear-brake arm was moved ahead of the axle for greater protection. The folding tip on the alloy shift lever now uses a steel spring instead of a rubber band. The seat has a completely seamless blue cover and extends up the rear of the gas tank for rider protection.



Honda engine is quick-revving but torquey

Responds like a 125, pulls like a 500.

you'll find the KTM and the Can-Am splitting their preferences between the turns and the straights.

King of the tight turns is the Suzuki RM500. Whether the turn is sand, mud or rock-hard adobe, the RM can slice through it like a samurai cutting a birthday cake. And it's so easy to dial-on just the right amount of throttle on the RM that the bike makes you wish the whole track were nothing but hairpin turns. The only flaw in the Suzuki's cornering ability comes in wider turns, where the front wheel occasionally either knifes under or takes an unexpected trip over the berm.

And the Suzuki has another habit that can take its rider by surprise. On choppy straights at very high speed, the RM's front wheel sometimes breaks into a terrifying side-to-side oscillation. It doesn't happen all the time, just when the course is very fast and the ground is very hard.

Next on the list of tight-turn royalty is the Kawasaki KX500. The Kawasaki doesn't quite match the RM for ease of turning, but few machines will be able to pass it on the inside if the KX rider decides he doesn't want to be passed. Like the RM, the KX gets better as the course gets tighter. And also like the RM, some twitchiness accompanies the KX through wide turns and down fast straights.

Striking a better balance between stability and turning ability is the Honda. Despite the fact that the CR480R has the steepest steering-head angle, it still can't match the Suzuki or the Kawasaki in a tight turn. But it comes close. And in broad sweepers the Honda is much easier to handle; you just pick a line and let the bike do the work. The same holds true on the straights. There is, however, a trace of a front-end nod, though it never becomes as violent as the Suzuki's can be.

No high-speed wobble at all can be found in the Maico's personality. Instead, the 490 Spider seems unstable at *low* speeds. The front wheel is easily deflected by rocks and sharp-edged bumps when the rider is in anything less than full-attack mode. But that characteristic doesn't affect the Maico's excellent cornering ability—which also is, to say the least, *different*. You don't just jump from one of the other machines onto the Maico and immediately go fast. Cornering the Spider is an acquired skill. With time you learn that its front end will stick better than any of the others, but you have to do things the Maico's way and use deliberate, forceful steering movements rather than trying to be fluid.

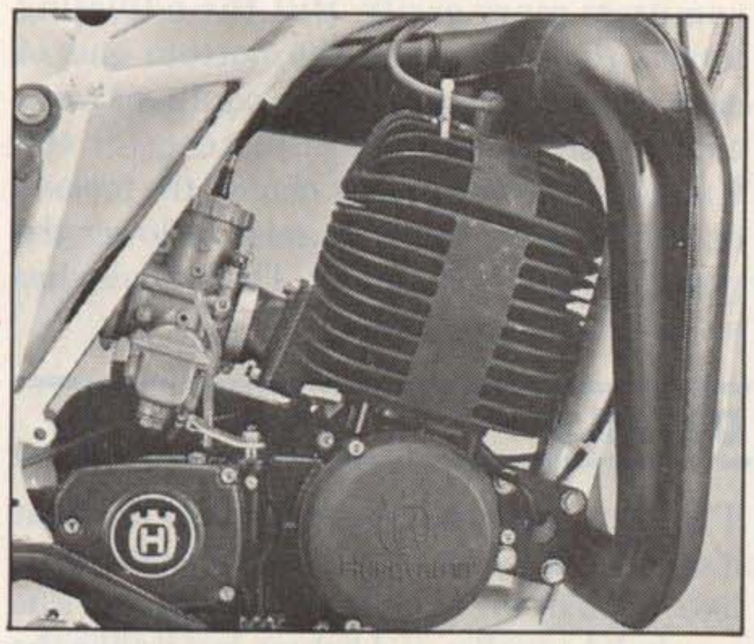
One reason adapting to the 490 is difficult is Maico's half-hearted attempt at a safety-type seat. Instead of making the task of climbing forward on the machine easier, the odd shape of the seat actually

TECH INSPECTION:

Husqvarna 500CR

ENGINE:

With just two exceptions—one being a reduction in the Mikuni carb's venturi size from 44mm to 40mm, the other a flat-black finish on the cylinder and head instead of the natural unpainted aluminum—the big Husky's engine is identical to the one in the original 500CR introduced late last year as a 1982½ model. Its forged, single-ring piston measures 86mm across and travels an 84mm stroke within one of the most heavily finned cylinders in motocross. An eight-petal reed valve and bridged intake port see the mixture into the engine, and a new exhaust system (reconfigured only so it could wrap around and through a new frame) escorts the spent gases to a rebuildable aluminum silencer. The gearbox is a four-speed that uses the same internal ratios as second through fifth gears on the pre-'83 430CR, but with considerably wider gears and beefier shifting forks.



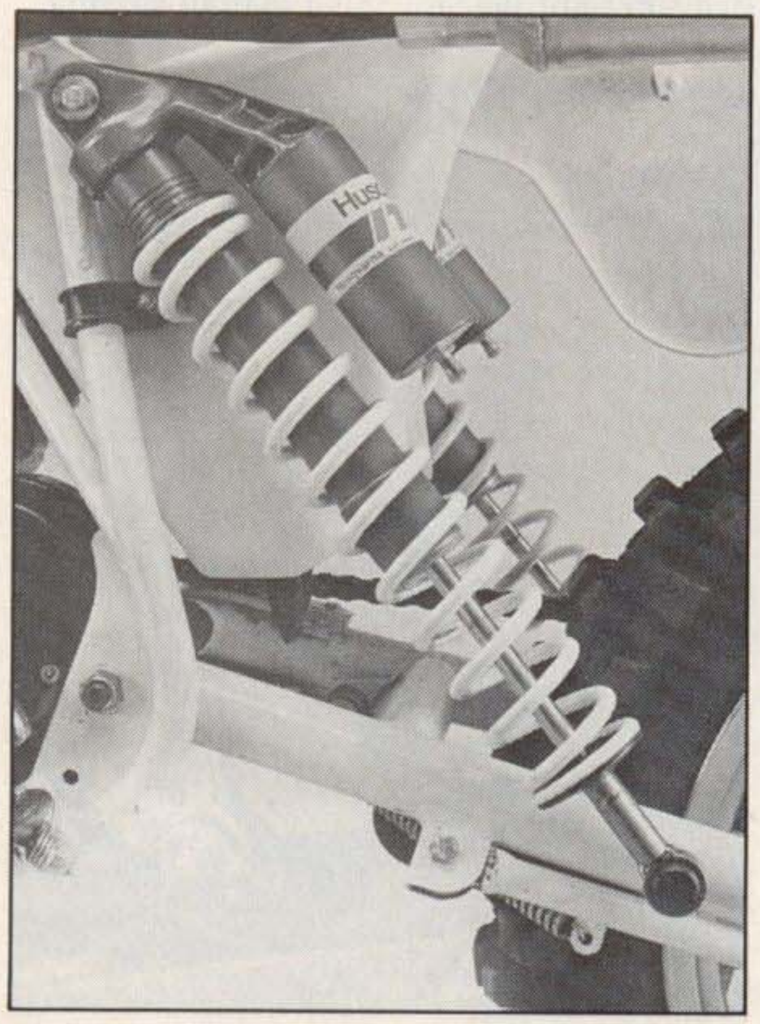
The 500CR's engine is extremely tall

And so is the overall gearing.

CHASSIS:

The '83 500CR still has dual-shock rear suspension, since that's what Husqvarna firmly believes in. The frame is entirely new, though, with quickened front-end geometry (30-degree head angle/140mm of trail vs. 30.5/152 on the '82½) and a steering head that was moved rearward to shorten the wheelbase one inch and put more weight on the front wheel.

There are new dimensions at the rear of the frame, as well, to allow almost 20mm of added wheel travel and more of a rising-rate suspension while accommodating longer (18.5 inches vs. 17.25) shocks. But the important aspect of the Husqvarna-developed Ohlins dampers is their ITC (Immediate Track Control) feature, which is a second, much-stiffer internal damping system that functions only during the final one-third of rear-shock travel. ITC allows the use of fairly soft shock springs and relatively light damping for supple compliance over smaller bumps; yet because ITC comes into play on the rebound stroke as well as on the compression, the auxiliary damping not only helps resist bottoming but also reduces the rear-end kickup that often follows harsh rear-wheel impacts. Unlike all the other bikes in this test, however, the Husky has no external damping adjusters on its shocks, so the behavior of its 18-inch rear wheel (replacing the 17-incher used since 1978) cannot be quickly changed to suit the track.



Husqvarna still believes in twin shocks

But not in external damping adjusters.

Up front, the Husqvarna-built fork is unchanged for '83, retaining the 40mm tubes, 300mm of travel and tapered damping rods that give less damping in the middle of the stroke than at either end. But the double-leading-shoe front brake is a new feature, utilizing the same friction linings as before but on different shoes that contain less magnesium to minimize their swelling when hot.

DETAILS:

A huge new airbox and dual-stage element filter air more efficiently than on previous CRs; but whereas removing the old element was a five-second, no-tools affair, getting at the new one demands removal of the seat. Styling changes for '83 include an all-white frame, swingarm and body panels, plus Supercross-style rectangular numberplates and the elimination of Husky's traditional polished knee-cutouts on the 2.8-gallon alloy gas tank.

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interferes with the rider's forward movement. As a result, most riders who seriously compete on '83 Maicos are replacing the seat with the more conventional unit from last year's machine.

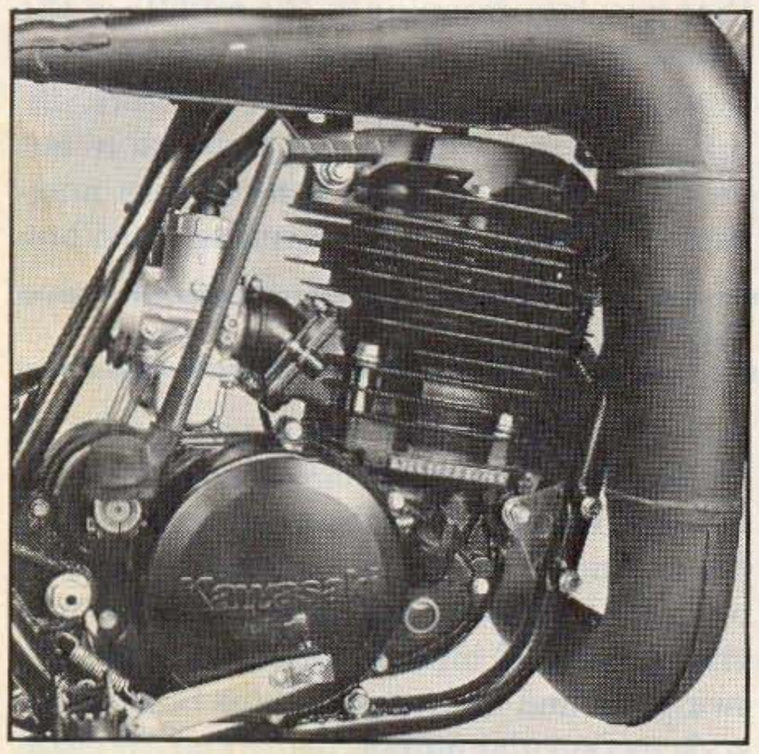
That same problem exists to a much greater degree on the Can-Am. It, too, has a seat that climbs up the gas tank in a way that prevents the rider from doing likewise. The seat is so steep where it overlaps the tank that it makes the rider slide back into the lowest segment no matter how hard he tries not to do so; and that invites front-wheel wash-out. We think the Can-Am has the potential to be a cornering wizard based on our experiences with the four-stroke Sonic MX, since that bike, which uses an identical chassis, was one of the best-turning machines we've ever tested. But the 500MX, with its lighter weight, slightly different weight-distribution and two-stroke engine, is merely an average

TECH INSPECTION:

Kawasaki KX500

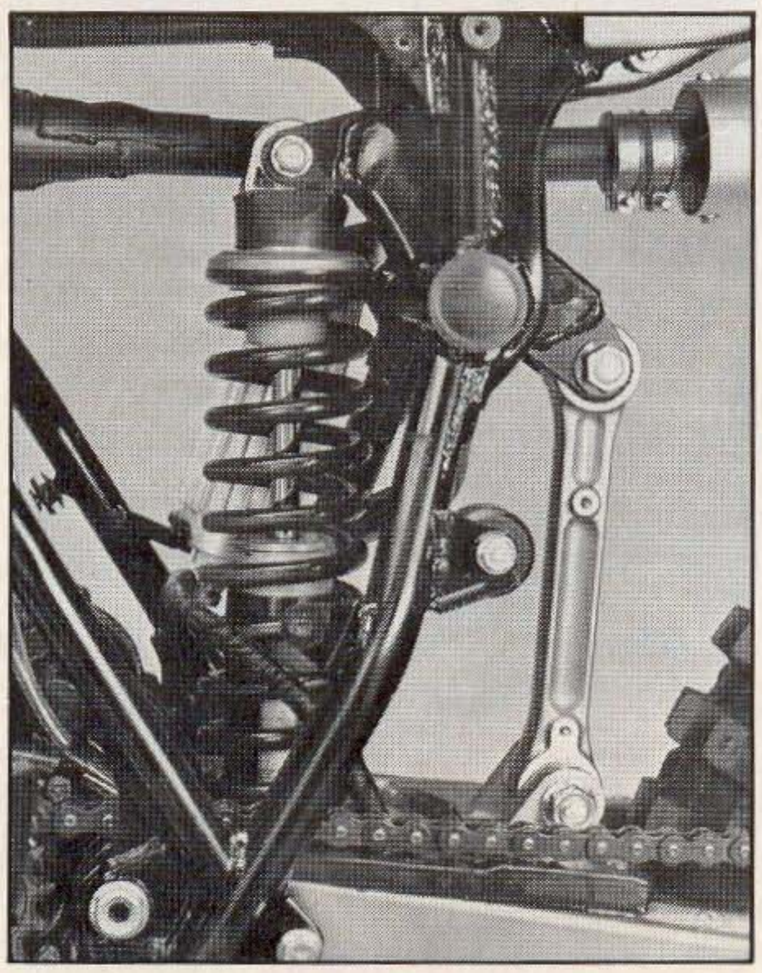
ENGINE:

The KX500 is Kawasaki's first Open-class motocrosser since the KX420 of 1981. The new engine has a few things in common with the 420's, as well as with the one in last year's KDX450 enduro; but among the important differences are that the new motor is almost 4.5 pounds lighter and that its 86mm-by-86mm bore-and-stroke dimensions net a 499.6cc displacement, the largest in the class. The 500 uses Kawasaki's patented linerless Electrofusion cylinder (a hard bore surface is sprayed directly onto the aluminum by using high-voltage current to vaporize special wires that are strung through the center of the cylinder), and the basic port design is the same as on those previous engines; but to optimize the 500's peak horsepower output, the ports themselves have different dimensions and the 38mm Mikuni feeds through a new reed block that houses eight epoxy-resin petals. The exhaust system (that terminates with a rebuildable aluminum silencer), however, is tuned to bolster low-end and mid-range torque; and instead of the 420's internal-rotor ignition, the 500 uses the external-flywheel type to add crankshaft inertia and thus smooth the power delivery in the lower rpm ranges. In the transmission, the 500's five internal gear ratios duplicate the 420's; but the combined effect of slightly lower primary gearing and a considerably higher final drive (43/14 on the 500 vs. 50/14) delivers eight percent taller overall gearing.



KX motor is the cc-champ of the Open class

And the king of cubic horsepower.



New single-link Uni-Trak rear suspension

Lighter and less-progressive.

CHASSIS:

The KX500 weighs almost 14 pounds less than the KX420, and its all-new frame, swingarm and rear shock account for nine pounds of that savings. Nonetheless, the most significant refinement is the new Uni-Trak rear suspension that uses just one vertical aluminum strut to connect swingarm to shock rocker-arm. And there's new geometry in the Uni-Trak linkage that yields less-progressive rear-wheel rates than on last year's KX250 or 125. The new alloy shock retains the 420's four-position rebound-damping adjuster, but there still are no provisions for tuning the compression damping. The deCarbon-type reservoir now is rebuildable, and a softer rear spring is available.

Neither is the 43mm Kayaba front fork much like the 420's 38mm fork. The 500's unit has almost an inch more travel and an adjustable compression-damping blow-off valve in each leg. The blow-off mechanism momentarily unseats when the front wheel hits a large or abrupt bump, thereby allowing a less-restricted flow of damping oil so the fork can compress more easily. But the adjusting screws (one up inside the bottom end of each slider) are not to be confused with compression-damping adjusters, for the Kawasaki's screws merely change the preload on the blow-off valves to raise or lower the point at which they unseat. The fork also has an optional softer spring.

DETAILS:

The diameter of the caliper piston in the front disc brake is larger (compared to that on the 1982 KX250) for more brake swept area. The rear hub is smaller and lighter, but it (like the front hub) laces to a stronger, thicker and marginally heavier rim.

turner. So is the KTM 495 a middle-of-the-packer when it comes to the tight turns. At first it was very difficult to manage in the tight stuff, primarily because the rear end always squatted badly enough to slow down the steering geometry. Increasing the preload helped, but a better cure came from fitting the heavier spring that's available from KTM. Then the machine became satisfactory in the turns and stable on smooth straights.

But by far the most stable bike of the bunch was, not surprisingly, the Husqvarna 500CR. The CR is a purebred Husky: fast, steady and, for most riders, a touch awkward in the tighter corners. The trick to going fast on the Husky is to use lines that make the corners short and the straights long. In the medium- and high-speed turns the Husky tracks with the best, and the rough, flat-out sections can never coax a wobble from the front wheel.

Although the Yamaha isn't quite as stable, its handling is remarkably similar to the Husky's. The YZ, too, is a straight-liner, but if the rider's weight is too far forward the bike will demonstrate a touch of instability. The Yamaha still will track straight through most high-speed obstacles, though, and like the Husky, it corners best using the point-and-shoot method.

One of the most surprising revelations about the Yamaha and the Husqvarna is that they are almost equal in agility and ease-of-handling despite the Husky being heavier by a considerable margin. In fact, the Husky, the Yamaha and the Maico all finish midpack on the agility scale. This is a judgment of how easy-to-ride and light a bike *feels*, which often is different than how light it really is.

Two cases in which the motorcycles feel heavy and *are* heavy are the KTM and the Can-Am. And that, more than anything else, is the common handicap that limits both bikes. At the other end of the spectrum are the Kawasaki and the Suzuki, both of which feel like big 250s.

There's one machine, though, that feels lighter still: the Honda. And even though it weighs only one pound less than the second-lightest bike (the YZ), it feels almost like it belongs in the 125 class. Because in addition to trimming weight, Honda has made a serious attempt to keep the center of gravity low, locating components like the shock linkage and even the gas tank as close to the ground as is practical.

What's more, that lightness has contributed to the Honda having the best overall suspension behavior of the pack. Truthfully, every one of these machines has suspension that would have been considered phenomenal just two years ago. But the challenge facing suspension designers these days is no longer the big, rolling whoop but

TECH INSPECTION:

KTM MC 495

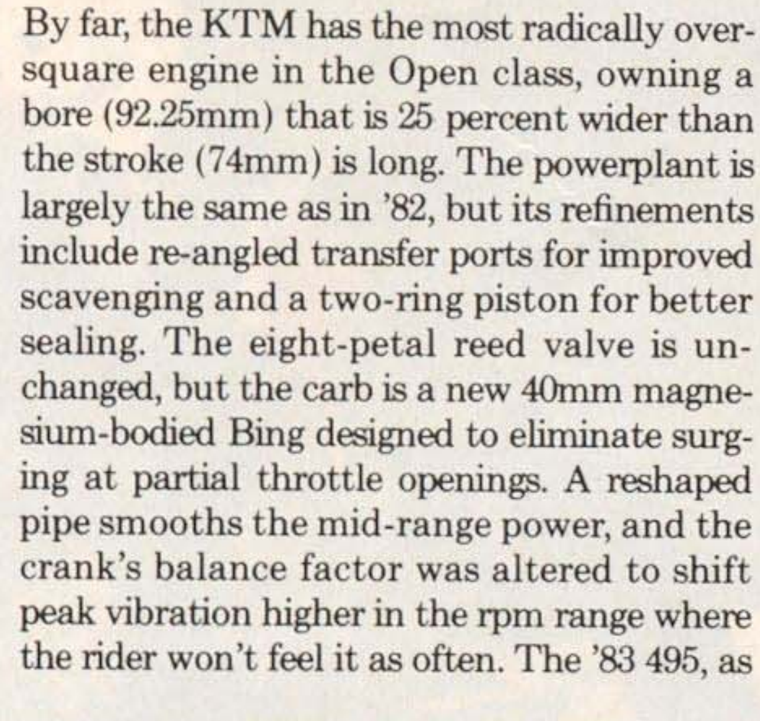
ENGINE:

By far, the KTM has the most radically oversquare engine in the Open class, owning a bore (92.25mm) that is 25 percent wider than the stroke (74mm) is long. The powerplant is largely the same as in '82, but its refinements include re-angled transfer ports for improved scavenging and a two-ring piston for better sealing. The eight-petal reed valve is unchanged, but the carb is a new 40mm magnesium-bodied Bing designed to eliminate surging at partial throttle openings. A reshaped pipe smooths the mid-range power, and the crank's balance factor was altered to shift peak vibration higher in the rpm range where the rider won't feel it as often. The '83 495, as well as later '82s, has an external-flywheel ignition (instead of the internal-rotor style) that has helped transform the power delivery from terrifying to tractable.

KTM converted what was a five-speed gearbox to a four-speed simply by leaving out last year's first-gearset and giving the former second gear a slightly taller ratio (1.5:1 vs. 1.6:1 on the '82). The other gears have the same ratios as before, but their engaging dogs use less undercut to ease shifting. And by making the back face of the clutch hub flatter to give the plates more-even support, KTM was able to use softer clutch springs on the 495 and thereby greatly reduce lever-pull.

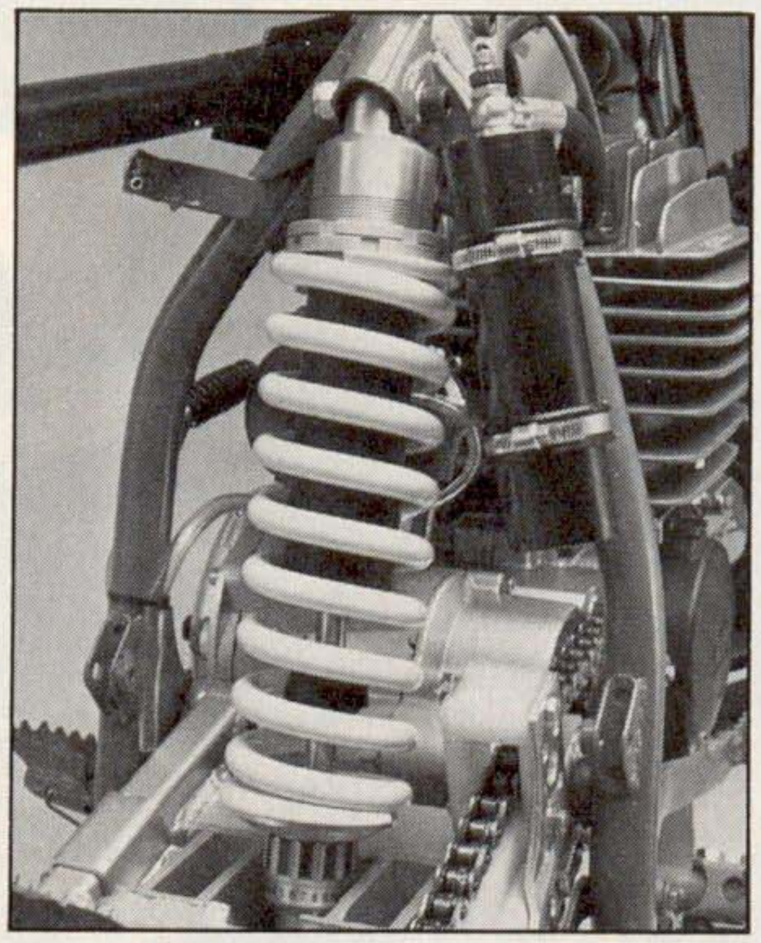
CHASSIS:

The 495 has a 4.75-pound-lighter frame that uses thinner-wall, larger-diameter tubing. The rear subframe still is detachable, but the forward-angled braces that connected the swingarm pivot to the backbone on the '82 bike were deleted. For improved stability, the steering head was repositioned to add one-half degree of steering angle but move the front wheel closer to the engine. The Pro-Lever rear suspension is all-new, with a White Power shock (instead of a Fox unit) mounted on a re-engineered linkage that yields less-progressive wheel rates. The suspension initially is firmer than on the '82 495, about the same at the three-quarter mark and slightly softer at full compression. The White Power has a 12-click rebound-damping adjuster ring on the shock body, plus a knob on the reservoir that varies compression damping anywhere within the adjuster's 2½-turn range. The KTM still is the only Euro-crosser with an aluminum swingarm, and the '83 rendition has a different type of gusseting at its front crosspieces to prevent stress-cracking in that area. There's also a new front fork, a 41.5mm Marzocchi that delivers about half an inch more travel than last year's 40mm unit, also a Marzocchi. The use of just one Teflon slider bushing per leg is claimed to reduce stiction and eliminate the hydraulic lock that sometimes occurred on the old fork when oil would momentarily get trapped between its dual bushings.



495's front disc brake has its advantages

Like whoa-power to match the go-power.



White Power shock has the right adjusters

But they need a wider range to work in.

DETAILS:

The front brake, a Brembo hydraulic-disc arrangement, is new, and so is the front hub. The rear drum brake is unchanged but now is actuated by a rod that runs inside the rear frame downtubes (rather than a cable outside them) to prevent being snagged by the rider's boot. The seat is now blue and extends up the rear of the gas tank.

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OPEN-CLASS MX

ROOST-OFF


CYCLE GUIDE
CYCLE GUIDE
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490

the small, choppy bump instead. And it's there that the Honda's fork and Pro-Link rear end outshine the rest, with the Husky and the Suzuki next in line. But while the RM's rear end is on par with the Honda's, its fork often suffers from a case of the jitters that contributes to the aforementioned high-speed head-nod. By switching from 5-weight to 10-weight fork oil and using the lightest compression-damping setting, the nod was reduced, though not always eliminated.

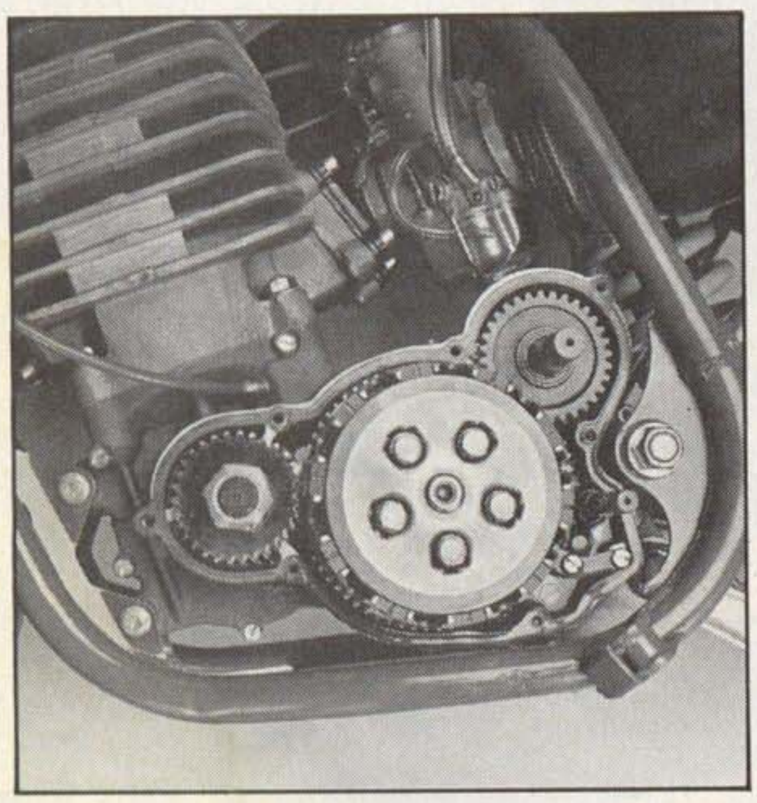
Overall, the Husky's suspension is exceptionally good. But we did feel that the straight-rate shock springs on our test bike were too soft for our 165-pound-and-up test riders. That's easy enough to cure, though, since there's a variety of straight- and progressive-wind springs available through Husky Products. In fact, just as we went to press with this test we learned of Husky's mid-year switch to dual-rate shock

TECH INSPECTION:

Maico 490

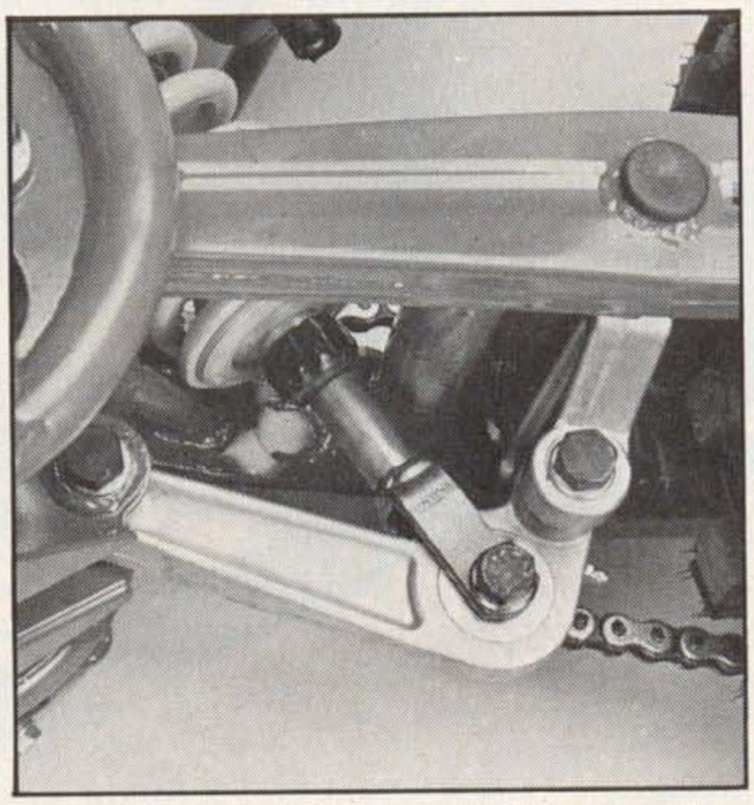
ENGINE:

Aside from the name on the outside and the displacement on the inside, there's little about Maico's new 490 motor that resembles the old one. The '83 engine has a six-petal reed valve just downstream of its 40mm Bing carb, whereas its predecessors always had a simple piston-port intake. Previous Maicos used a chain-type primary drive, but this one has straight-cut gears. And while Open-class Maicos for years have been five-speeders, the '83 is a four-speed. The new engine does have the same bore and stroke, compression ratio, internal-rotor Motoplat ignition and basic exhaust system (but now with a rebuildable aluminum silencer) as before; and except for the addition of a boost port above the intake port, and a corresponding hole in the rear of the piston, even the porting is similar. But that's where the similarities end. The new crankshaft is 12 ounces lighter, the connecting rod is wider at the big end and has a larger bearing at the small end, and the dual main bearings on the primary (left) side have a seal between them, with the inner bearing lubricated by oil mist in the crankcase and the outer by gearbox oil. Further, Maico has abandoned its long-time use of cupped Belleville washers as clutch springs in favor of five conventional coil springs. Previous Maicos used a flat, sliding plate as a means of moving the shifting forks, but the '83 engine's all-new ratios are selected by a rotary shift drum. And the new 490 has just two shafts in its gearbox, whereas Maicos since 1978 have had three shafts.



Geared primary drive, coil-spring clutch

Two long-awaited changes from Maico.



490's new rear linkage and Ohlins shock

With 44 damping rates to choose from.

CHASSIS:

The 490 Spider sports a new single-downtube frame rather than the double-downtube design used previously. The wheelbase is unchanged but the steering geometry is quicker (27 degrees/120mm of trail vs. 28.5/126mm) and the Dual Control single-shock rear suspension has a significantly lower leverage-ratio—enough to drop the spring rate from the 700-pounder on last year's Corte & Cosso shock to the 442-pounder on this year's Ohlins. The new suspension system, which links to a redesigned chromoly swingarm, offers 17mm more rear-wheel travel than the '82 arrangement; and the Ohlins shock features a 44-position adjuster that simultaneously changes the compression and the rebound damping. The Maico-built, 41.5mm front fork was refined, too, and now employs progressive-wind springs plus one additional damping orifice per leg, and it offers an additional 5mm of wheel travel.

DETAILS:

The 490 Spider still has a single-leading-shoe front brake. The rear brake assembly was redesigned to incorporate new brake shoes and a higher pedal-to-actuating-arm leverage ratio; and according to Maico, the designers chose not to continue with a full-floating rear brake simply to save weight. Both brake hubs lace to Nordisk rims with new 8-gauge, unshouldered spokes. A spacious, one-piece plastic airbox houses a large dual-stage filter element. New styling treatments include rectangular side and front numberplates, and a bright red seat that extends a short distance up the rear of the 3.3-gallon plastic gas tank.

springs on all late-'83 CRs, which should cure any bottoming problems. Our only other rear-suspension complaint came on several of the tracks where the bumps were large but rather widely spaced. The rear end tended to recoil too quickly as we bashed from one bump to the next, causing us to wish for an easy way to adjust the rebound damping on the dual Ohlins shocks.

Yamaha's redesigned-for-the-second-year-in-a-row Monocross rear suspension rates right behind the Husky's system. We increased the spring preload four millimeters over the stock setting but found that the rear end still tended to use too much travel before even hitting the bumps. For heavier riders, then, the optional stiffer rear spring will be a necessity.

On the other hand, the Yamaha's front fork was one of the best in the test. It doesn't feature any kind of external adjustment, but we never felt the need to change the fork for any of the track conditions.

The fork on the Maico, however, did require some work. With zero psi, the front end would dive; but with enough pressure to keep the nose up (at least six psi), the fork felt harsh and would tire the rider's arms. We finally settled on zero psi but with one-inch-long preload spacers atop the springs. That cured the diving problem, although the fork still would freeze up on low-speed impacts, accounting for the bike's low-speed instability.

In the rear, the Maico's Ohlins shock gets the job done quite nicely this year. Little and big bumps alike are easily absorbed by the Dual Control system, but once again we found that the suspension is set up for light riders. With our riders aboard, the shock would bottom more than the usual once or twice a lap on all but the smoothest tracks.

Sixth-place in the suspension race belongs to Kawasaki. The KX500 we tested was equipped with the optional soft fork springs, which helped the front suspension to work very competently, although not spectacularly, since it transmitted more of each track's irregularities straight to the rider than did the better forks in the test. And like the fork, the rear of the KX was sufficient but unremarkable.Over closely spaced stutter-bumps, the rear suspension often found it difficult to connect to Mother Earth, and playing with the rebound damping seemed to make little difference.

Of all the hours spent adjusting suspension, however, more than half of them were spent dealing with just two machines: the KTM and the Can-Am. After switching to the heavier rear spring, the KTM's cornering potency was improved, but rough tracks made for even rougher rides. Much

TECH INSPECTION:

Suzuki RM500

ENGINE:

In its motor as well as its chassis, the RM500 differs very little from last year's RM465. The displacement is greater (492.1cc vs. 464.7cc), but that's simply the result of a 2.5mm-larger cylinder bore (88.5mm vs. 86mm) working in conjunction with the same 80mm stroke. In port layout and state of tune, however, everything but the compression ratio (up from 6.1:1 to 6.2:1) is unchanged. Intake air still enters a 38mm rectangular-slide Mikuni through two separate dual-stage filter elements housed in a complicated plastic airbox. The fuel-air mixture then is passed into the crankcase through an eight-petal reed valve. Six transfer ports route the fresh charge into the combustion chamber, and a single exhaust port dumps the spent gases into an exhaust system that is a clone of the 465's. Even the bottom end is unchanged, except that the crankshaft wheels are slightly larger in diameter, yielding about seven percent greater flywheel inertia. And to make better use of the increased power output, the 500 employs slightly higher final gearing (a 46-tooth rear sprocket vs. 47 on the 465) and a taller second-gear ratio (1.555:1 vs. 1.611:1). Also new this year is a forged-aluminum, folding-tip shift lever.

CHASSIS:

Due to the new-style Bridgestone tires—which have different profiles than the 465's Dunlops—and some changes in wheel travels, the RM500 has ended up with one-half degree more steering-head angle and an additional millimeter of trail. But otherwise, the single-downtube chromoly frame and extruded-aluminum swingarm are virtually unchanged. Even the overall weight of the 500 (234 pounds) is the same as that of the 465.

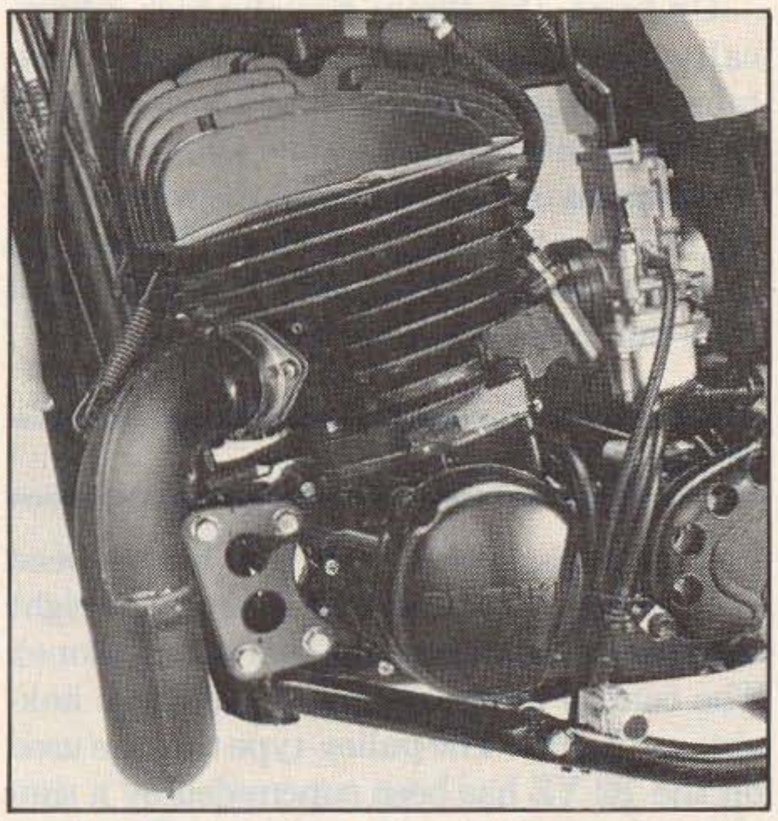
There are a few significant chassis differences, though, such as the addition of a compression-damping adjustment screw up inside the bottom end of each fork leg. The adjusters have no detents, making them variable anywhere within eight turns. The 43mm Kayaba fork also delivers about an inch more travel than the 465's unit.

In the rear, the Full Floater suspension now features a four-position compression-damping adjuster on the remote shock reservoir, which uses a neoprene bladder rather than a deCarbon-type free piston to separate the pressurized nitrogen from the damping oil. The shock body itself houses a four-way rebound-damping adjuster wheel. The RM500 also has 22mm more rear-wheel travel and reduced rear-wheel rates, thanks to new lightweight vertical struts (the links between the swingarm and the shock's bell-crank) that are mounted 11mm closer to the swingarm pivot.

Sharp eyes also will notice that the RM500 has a double-leading-shoe front brake. The front-brake hub, however, as well as the entire rear brake assembly, is the same as on the 465, right down to the semi-conical hubs and straight-pull spokes.

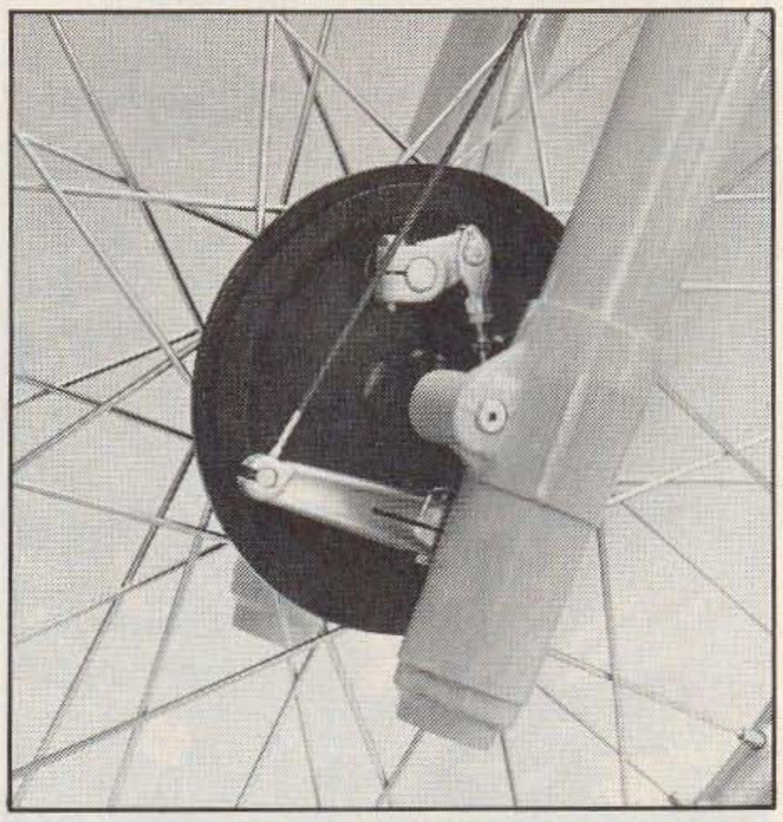
DETAILS:

The RM500's plastic bodywork is unchanged. The only cosmetic differences are the yellow-painted fork legs, the restyled decals on the gas tank and side numberplates, and the blue seatcover—although the seat itself is the same as used on last year's RM465.



Sneaky-fast RM motor is no powerhouse

But it puts all it makes to the ground.



RM500's new twin-cam front brake

Two leading shoes stop better than one.

Continued

of this was because the White Power shock doesn't really have enough rebound damping to cope with the heavier spring. So even with the rebound set on maximum, the KTM often pogoed from one bump to the next.

We also put a stiffer rear spring on the Can-Am, since in stock form the rear was far too soft, even for light riders. The optional spring put the Quad Link in the ballpark once the damping adjuster on the Ohlins shock was set two clicks from maximum, but even then, going through the whoops on the Can-Am was a lot of work. Some testers blamed the problem not on the shock but on the footpeg location, which seemed to them too far forward. Either way, the Can-Am's rear suspension wasn't up to the standards set by the others.

That wasn't the case with the Marzocchi forks used on both the KTM and the Can-Am. Although each bike's fork was built to different specifications, they were similar in feel, which is to say good. We ran both with slightly less than the recommended oil level, but in the end that came down to a matter of personal preference.

Indeed, with enough work, it's likely that you could get any of these suspension systems to perform to your liking. Engine characteristics, though, are more difficult to tune. And it's the engines, more than anything else, that separate these machines. In fact, fitting these engines into specific performance categories virtually would require eight separate categories, each one applicable to a different engine.

For example, the Can-Am is a tractor. It produces a staggering amount of low-end power, and yet is responsive and quick-revving. It flattens out on top, so you quickly learn the best way to ride the Can-Am is to short-shift. Unfortunately, the Rotax engine is handicapped with gearbox ratios that are, well, *wrong*. With stock gearing, the first two gears are useless for any motocross application, and the machine will top-out at just over 60 mph in fifth. Consequently, we conducted most of the test with an 18-tooth countershaft sprocket on the Can-Am instead of the stock 14-toother, and that made the 500MX more comparable to the others.

Gearing on the KTM is much closer to the mark, and while its engine doesn't produce near the amount of low-end that the Can-Am churns out, it's still the stuff that berms live in fear of. KTM engineers have taken last year's explosive powerplant and calmed it down to the point where it's reassuringly easy to use. And the Suzuki's powerband is just as mellow, although very misleading; because while the RM fools you into believing that it's not accelerating all that hard, it really is, simply because it

Continued

TECH INSPECTION:

Yamaha YZ490

ENGINE:

The '83 YZ490 contains more refinements than its outward appearance suggests. A 38mm Mikuni carb feeds the 487.5cc engine through a new intake manifold (but the same six-petal reed valve) into an oval inlet port, with four transfers and a single booster directing the mixture into the top end. The transfer-port cutouts on the bottom of the cylinder liner are 10mm higher, and that, along with a higher compression ratio (7.4:1 vs. 7.0:1) and a larger exhaust port (1mm higher, 2mm wider) results in more high-rpm power. The exhaust system and the YEIS (Yamaha Energy Induction System) canister plumbed into the intake manifold are essentially unchanged, but the airbox is new, requiring the removal of the seat to gain access to a larger, more efficient dual-stage element.

There are innumerable detail changes throughout the engine, some for improved durability, but most intended to save weight. The cylinder casting is smaller and has fewer fins (but thicker fins around the exhaust port and on the cylinder head); and the kickstart mechanism, the shift linkage, the countershaft sprocket and its outer cover, and the entire clutch assembly all are lighter.

CHASSIS:

For the second straight year, the YZ has an all-new rear suspension, acquiring a new chassis in the bargain. The steering geometry is the same as in '82, but the wheelbase is an inch shorter, and the frame uses thinner-wall tubing that contributes to an 11-pound reduction in the 490's overall weight. The new Monocross rear suspension is not significantly lighter, but it has dropped the bike's center of gravity by positioning the single shock lower in the chassis. The shock linkage, now under the swingarm instead of above it, delivers about the same wheel travel as before, but the wheel rate is more progressive. The rear suspension is softer throughout most of the travel but its rate rises more sharply toward the end of the stroke, finishing with a stiffer overall rate than with last year's Monocross. The shock body is lighter, 45mm shorter and has a 13mm-shorter stroke, and the standard spring is 20 percent stiffer due to the increase in wheel-to-shock leverage. A big thumbwheel on the shock body allows 20 rebound-damping adjustments, and a small knob on the deCarbon-type reservoir provides 15 compression-damping settings.

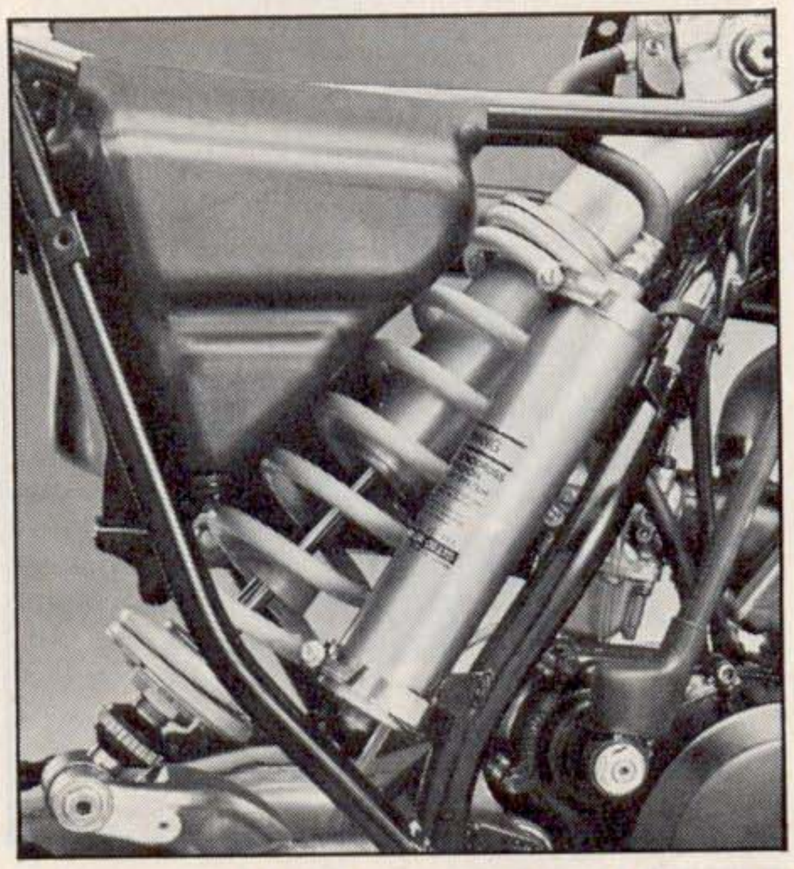
Up front, the 43mm Kayaba fork is basically like last year's, but each leg now contains a compression-damping blow-off valve that momentarily unseats and allows the fork to compress more easily when the wheel hits a big or abrupt bump. This blow-off feature is like the one on Kawasaki's KX500 except that the Yamaha's is not adjustable.

DETAILS:

Lighter hubs, spokes, tires and hollow-bead rims result in considerable unsprung-weight savings (4.4 pounds in the rear wheel alone). The control levers and all of the brake linkages are lighter. The pulley-type throttle used on the '82 YZ has been superseded by a simpler right-angle throttle assembly. The front of the seat does not extend up the gas tank as far as on the '82 model.

YZ490 engine finished third on the dyno

But first in every dragrace.



Monocross suspension is all-new again

That's two redesigns in as many years.

When the Gate Drops

• The most important distance on any motocross track is the section between the start gate and the first turn. If you've ever gotten a poor start but then ridden flawlessly, only to come up with a middle-of-the-pack finish, you know just *how* important that first-turn dash can be.

So after spending months learning just what it takes to ride flawlessly on each of these eight motocrossers, we wanted to learn how they stack up in the all-important first-turn dragrace. To eliminate the variables of conventional dragraces, and to get the most accurate times, we decided to run each machine separately against the clock. Elapsed-time lights were set up at the bottom and top of the 240-foot start hill at DeAnza Cycle Park in Sunnymead, California; each bike was given a fresh set of Metzeler tires, and a total of more than 400 runs were made. The fastest time of each machine is represented in the bar graph on this page.

One of the first lessons we learned is that horsepower is not the only factor in the holeshot. For example, the Kawasaki churned out the most impressive numbers on the dyno, but up the hill it was in the middle of the pack. The KX always launched well, but halfway up the hill the front wheel would spring up. Only careful throttle-control could keep the KX's nose down—but that cost time.

On the other hand, the Suzuki put in a so-so showing on the dyno but had the second-best performance against the lights. The RM's power delivery is so manageable that it earned the honor of being the most consistent out of the hole, as well as one of the quickest. The front never came up, the machine never went any way but straight and shifting never presented a problem.

Shifting did, however, appear to be a sore spot for the Husqvarna. It was geared so tall—even after we added a three-tooth-larger rear sprocket—that it was one of the few machines to bog when launched in second gear. But when started in first, the Husky lost time due to the slow, deliberate shifts it requires. We learned it was best to start in second and slip the clutch for almost 50 feet. When launched like this, the 500CR could remain in one gear all the way up and produce good, although inconsistent, times.

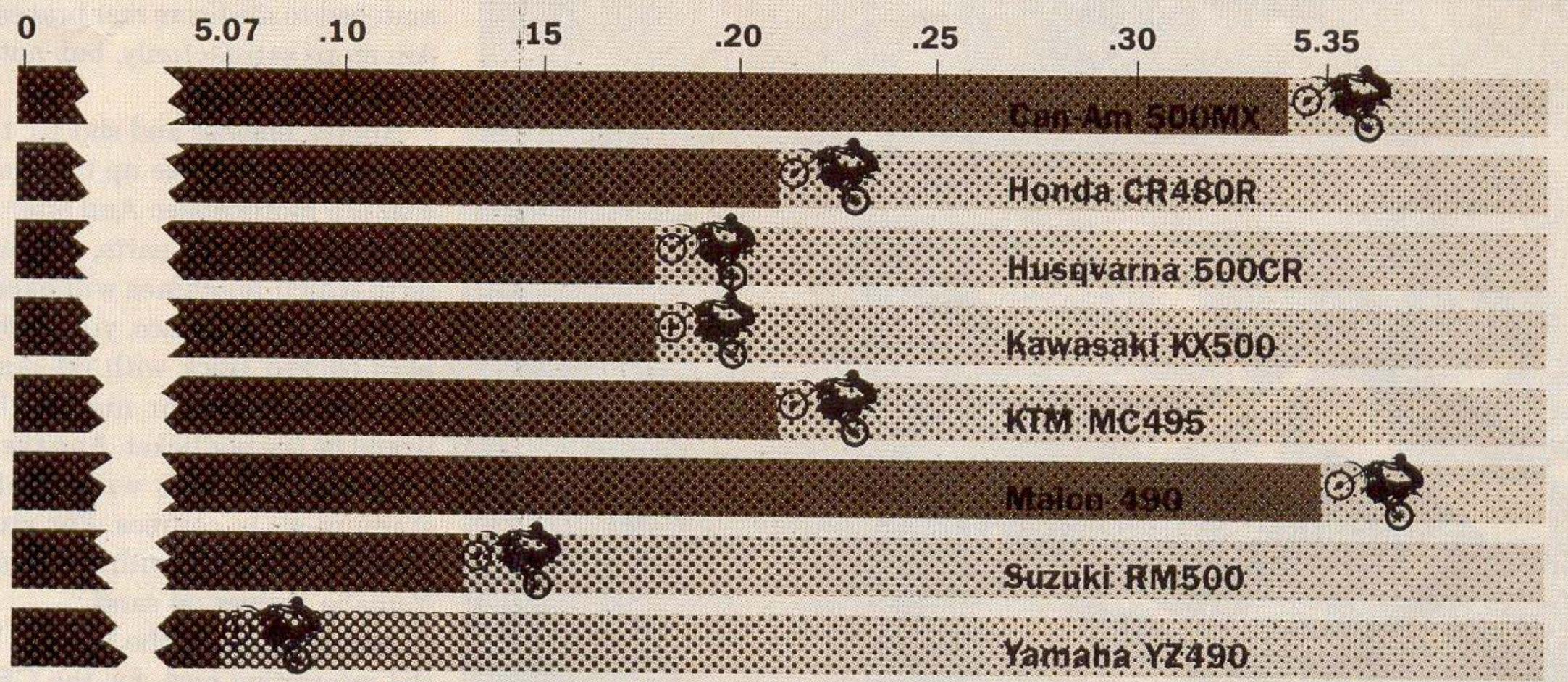
The Honda was just the opposite. Second gear was ideal for the start, but the close-ratio transmission required *two* shifts in the 240-foot distance. Shifting the Honda is so effortless, though, that the extra shift cost it virtually no time. The only machine that produced its best results with a first-gear start was the KTM. It isn't geared as tall as the Husky, but there is a large gap between first and second. And in any gear, the KTM was difficult to hold on a straight course.

That same problem was shared by the Maico. A grabby clutch made it take off with too much wheelspin, which caused the machine to go sideways. Once under way, though, the Maico accelerated with the best, although the gears seemed a touch too widely spaced.

The machine that seemed to possess the most undelivered potential was the Can-Am. The seat and gas-tank shape prevented the rider from climbing far enough forward to keep the nose down. And like the Maico, the jump from second to third gear is a bit too wide.

But you can pick tiny flaws with the way every one of these machines reaches the first turn. Every one except, perhaps, the Yamaha. By virtue of its almost endless powerband, the YZ was the holeshot-king of the crowd. At times it didn't seem willing to track as straight as the RM, but even then it was accelerating harder and going faster than any other of the Open-classers. It launches straight enough, runs strong enough and shifts well enough to get you to the first turn well ahead of the rest of the pack. What you do after that is up to you.

—Ron Lawson

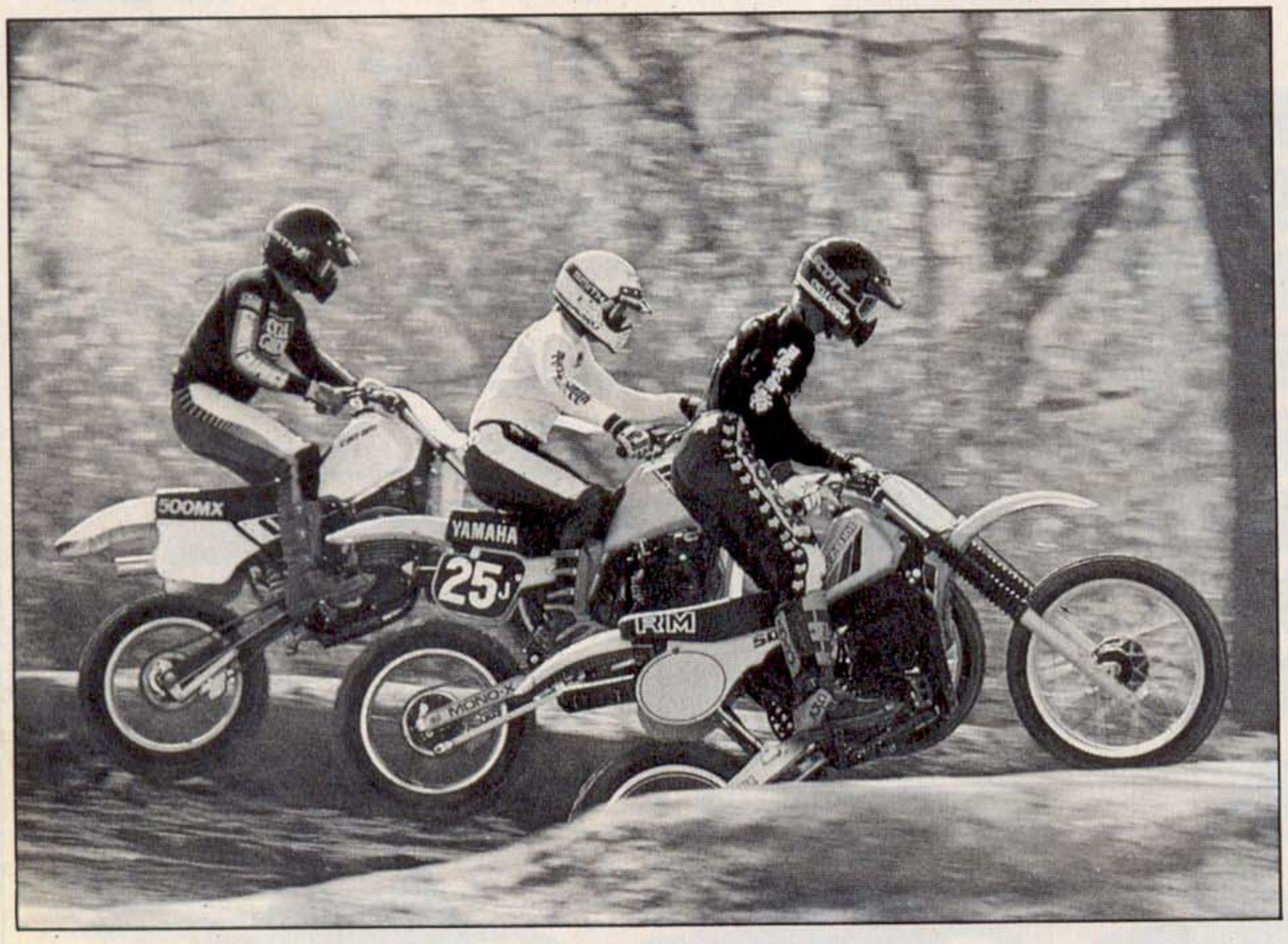


puts every bit of its horsepower on the ground. And so despite what the dyno says, the RM runs with, or *past*, the more-powerful-feeling bikes.

Another good example of how the dyno can be deceiving is the Kawasaki. Its horsepower numbers lead you to believe that the KX is an explosive, peaky rocketship that specializes in terrifying its rider. But although the KX is strong and pipey, the engine has enough flywheel-effect to smooth the powerband into something very controllable.

Don't, however, think that the KX engine is perfect. It seems to have a problem with its combustion-chamber design, for it often detonates so badly that a seizure is almost guaranteed unless the jetting is quite rich. And since the cam-grind of the piston also is suspect, you still might have to sand the sides of the piston to gain more clearance. After all, the can't-be-rebored Electrofusion barrel is too expensive to risk damaging.

No such problems cropped up on the Yamaha. It always ran cleanly all the way up to an incredibly high peak rpm. And like the Suzuki, the YZ has power that is linear, but the Yamaha is just plain *faster*. The YZ490 would have the perfect Open-class powerplant if it only produced slightly more torque at low rpm. As it is, you can



fall off the bottom of the power curve on the Yamaha and have a difficult time getting back on it without a clutch-fan or a downshift. But in turn-to-turn dragraces, the Yamaha reigns supreme. Only slightly behind the YZ is the Husky. The 500CR doesn't rev as highly as the Yamaha but it compensates with more low-end power. The Husky probably has the broadest range of usable power of any motocrosser we've ever ridden. The bike's designers have tried to put this wide powerband to its best use by using tall gearing, but they've overshot the mark. The high first gear especially hampers lap times on tight courses. If you have an unusually strong left hand you might be able to get away with fanning the stiff clutch lever, but otherwise it's better to change the final gearing to something more practical. That's why we went from the stock 53-tooth rear sprocket to a 56 on our bike.

It's also advisable to check the intake-manifold on any '83 Husky for air leaks. On earlier models, the rubber part of the manifold sometimes isn't securely bonded to the metal base, allowing dirt to be drawn into the engine. It happened on our 500CR, necessitating a new piston and a rebore. Later models have an improved manifold, though, and Husqvarna will warranty any repairs made necessary by the failure of the older-style manifold.

A similar story came from Honda when our 480's ignition repeatedly went sour. The symptoms ranged from high-rpm misfiring at the track to a holed piston on the dyno. Honda has experienced several ignition problems on early 480s (primarily test bikes) but reports few failures on the later production bikes.

When the Honda is in good health, though, it has impressive power that stems from the unusual combination of uncommonly light flywheels and exceptionally strong low- and middle-rpm torque. The result is a crisp motor that has the instant throttle response of a 125 and the omigod acceleration of an Open bike. But don't get the idea that the Honda's power hits like a runaway train, because it has no peak or surge that could prove hard to control. There's just plenty of power available anytime you need it that's delivered in a way you can use it.

The Maico is powerful, too, but in a different way. The Spider's power is delivered gradually and in quantity, but unlike Maicos of the past, the powerband isn't linear. The engine pulls well at low rpm and is strong on top, but there's a flat spot right in the middle. The hesitation isn't severe and at times is barely even noticeable, but it can cost time on the track. This year's Maico also has less crankshaft weight in an effort to make the engine more responsive, but that also makes the engine easier to kill when braking hard.

That stalling problem is magnified because the Maico has the worst brakes of the bunch. The rear binder manages to combine a need for great pressure with a tendency to be grabby—a remarkable marriage of the worst of everything. And the free-play in the pedal varies with the movement of the swingarm, making the wheel jump and chatter over braking ripples. However, the Honda, Yamaha, Suzuki and Husky are excellent stoppers. But while the Kawasaki and KTM both use disc front brakes that work very well, both are matched to mediocre rear brakes. The Can-Am stops satisfactorily, but not as well as most of the others.

Brakes, engines and shocks, though, are just parts that make up the greater whole that is a motocrosser. And after learning so much about those parts, it's easy to compute which machines will excel on what course. If, for instance, you have a smooth, hard-packed track with off-camber turns, then the Maico, or maybe the Suzuki, would be the hot ticket. And the RM, along with the KX, also will excel on tight, stadium-style courses. For muddy races you can't go wrong with the Husky, and the Yamaha thrives on sand.

And what about the Honda? Well, that's the interesting part, for the CR480R does well in *all* of these conditions. Because of its small-bore-like agility and top-notch suspension, though, its best turf is the rough, difficult track. Conversely, the Can-Am and the KTM are restricted to the smooth, easy courses, where their weight won't prove too limiting.

But you rarely get the luxury of designing the track you race on. And that's why the Can-Am and the KTM finish in the bottom two slots of this test. The Can-Am has potential, but potential alone isn't enough to win races. In stock form, the bike

seems a rushed and unfinished project, which is why it's relegated to last place. Finishing one spot up is the improved but not-improved-enough KTM.

Four of the machines finished in extremely close order, but by averaging the results from the different tracks and riders, we concluded that the Maico netted sixth place, right behind the Yamaha. The Husqvarna came in fourth, and despite its combustion-chamber problems, the Kawasaki proved a capable-enough racer to capture third.

Second place was an easier decision. The Suzuki's deceptive power, excellent suspension and light weight make it a threat to win on any track, especially if the turns are tight and the straights are rough.

But still it's the Honda that finishes on top. The CR480R isn't a winner just because it turns the quickest lap, nor because it has the best suspension. The Honda is a winner also because it's the only machine that dares respond to the Open-class question with something more than brute force. It's an answer too long in coming, even though it's been demonstrated time after time in the 125 and 250 classes. The CR480R's success with that small-bore philosophy proves that from now on, Open-class motocross will never again have to be such hard work. *—Ron Lawson*

Ride Review

• It sounds like a cop-out to say that any one of these Open-classers could haul you to victory circle. But it's true. Not one of them is far enough off-base to prevent some backyard tuning from making it a winner. A gearing change here, an optional spring there and you could throw a blanket over the whole bunch as they crossed the finish line.

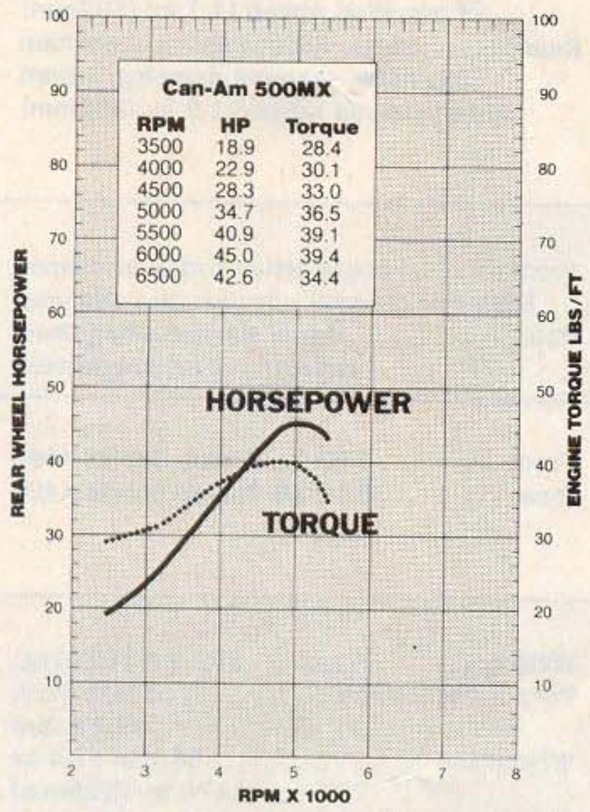
All, that is, except the CR480R, which can race to victory circle straight from the crate. With the addition of nothing more than fuel, the CR instantly was as competitive as the other seven bikes were after weeks of careful tuning. We didn't have to change fork oil or spring preload, and we only changed jetting to suit the weather. But we spent hours on the other bikes, ironing out wrinkles that should have been fixed at the factory. When we had finished, they were all improved—and almost a match for the Honda.

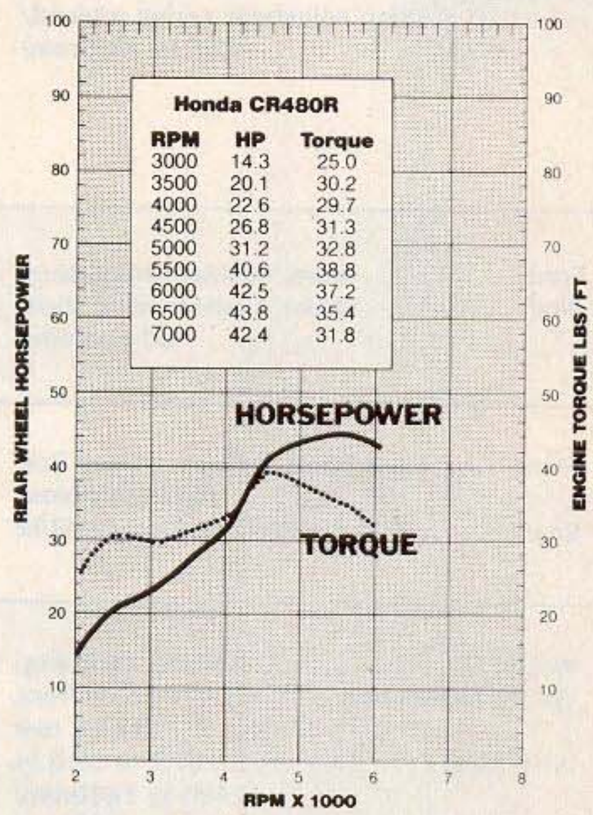
With an equal amount of time and money, though, we doubtless could have improved the Honda, too. But none of us felt it needed any improvement. It was competitive enough just as packaged. All of these Open bikes might be potential winners, but they were not all created equal. *—David Dewhurst*

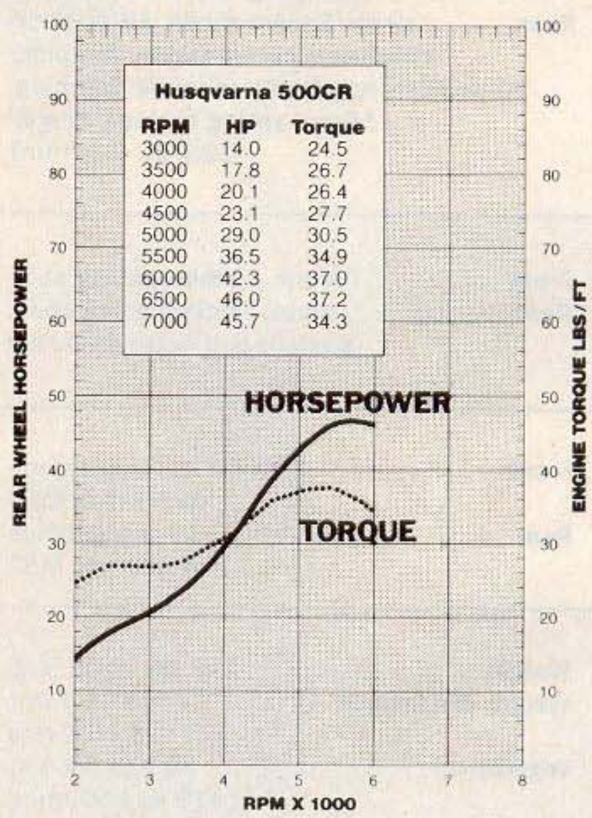
• I agree: The CR480R is the class of the class here, the one bike I'd most like to take Open-crossing. But in many ways, the most impressive motorcycle of the lot is the one that finished a close second, the RM500 Suzuki. What makes that placing so remarkable is that, for all intents and purposes, this RM is the same bike that won our Open-class comparisons of 1982 and—believe it or not—1981, as well. Okay, so the big RM now displaces 492cc instead of 465, and it has one less gear box speed and a bit more wheel travel; nevertheless, the new 500 is essentially the same as the 1981 RM465, right down to its basic engine, frame and important statistics such as steering geometry and wheelbase. And at 234 pounds, the 500 even *weighs* exactly as much as its two 465cc predecessors.

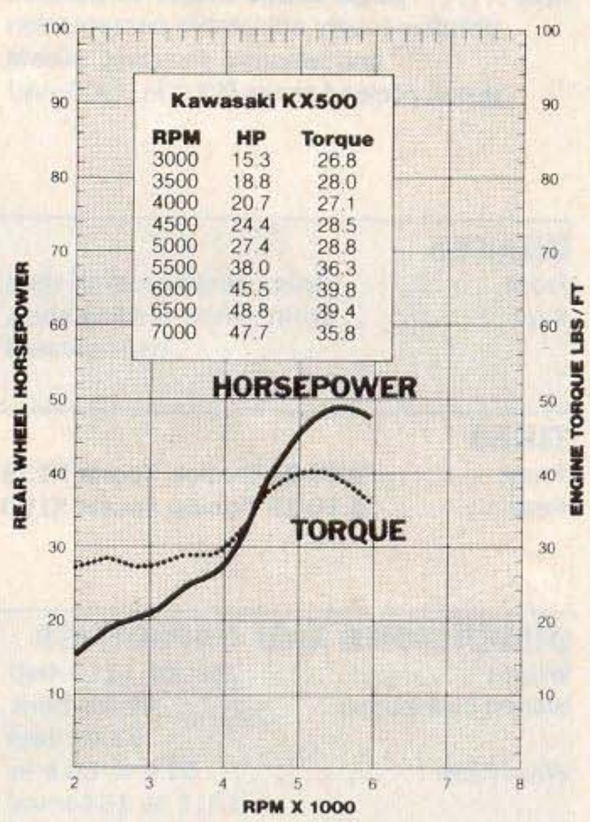
Considering how quickly motocross bikes usually become obsolete, then, it's truly amazing that the two-year-old RM still is so fiercely competitive. True, it's no longer *the* dominant force in the Open class, but it's close, very close. And that just shows the intelligence of its fundamental design. It was "right" two years ago, and—Honda's extraordinary CR480R notwithstanding—it still is today.

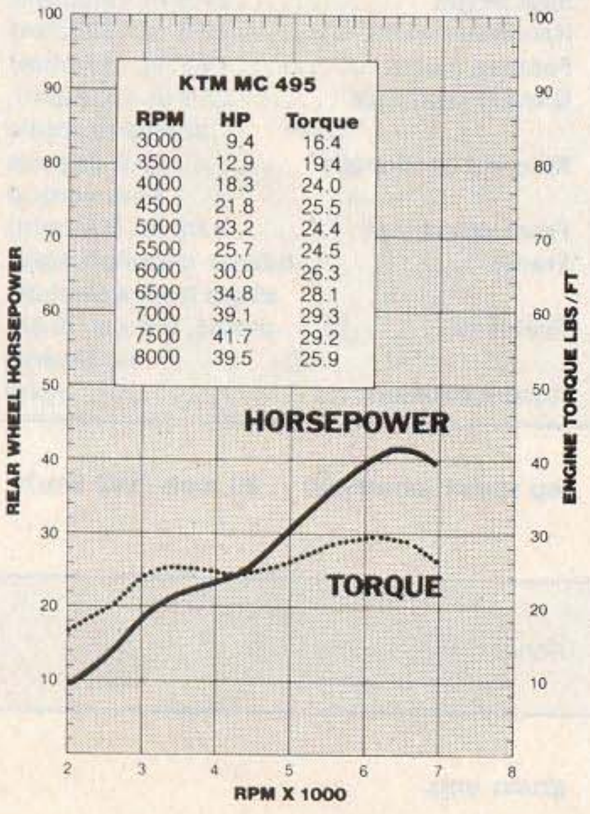
—Paul Dean

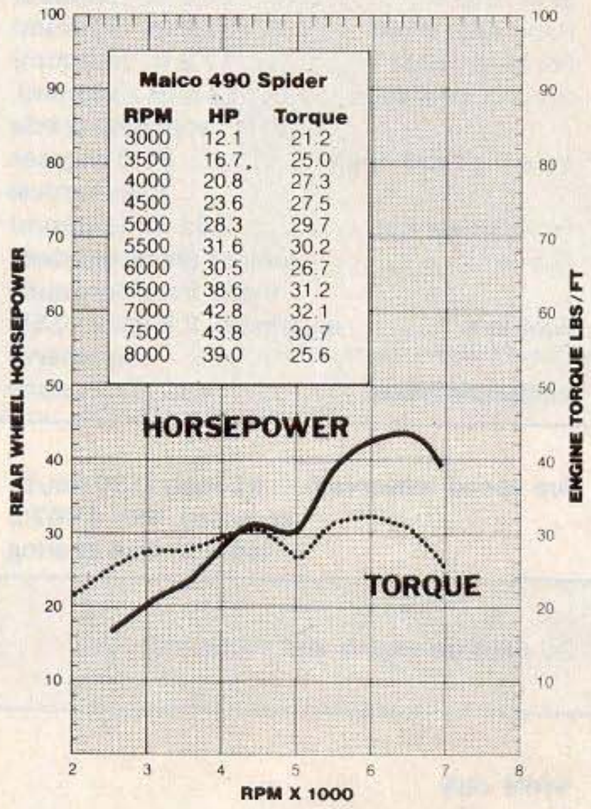


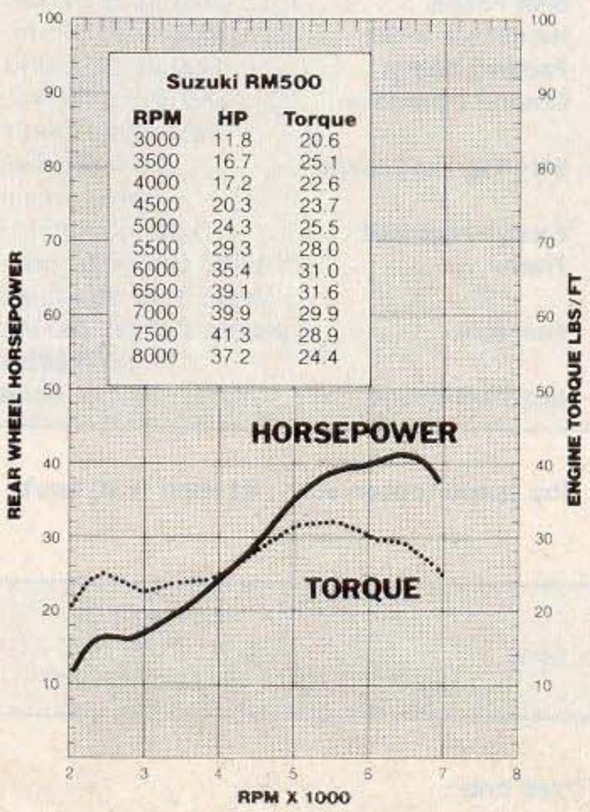


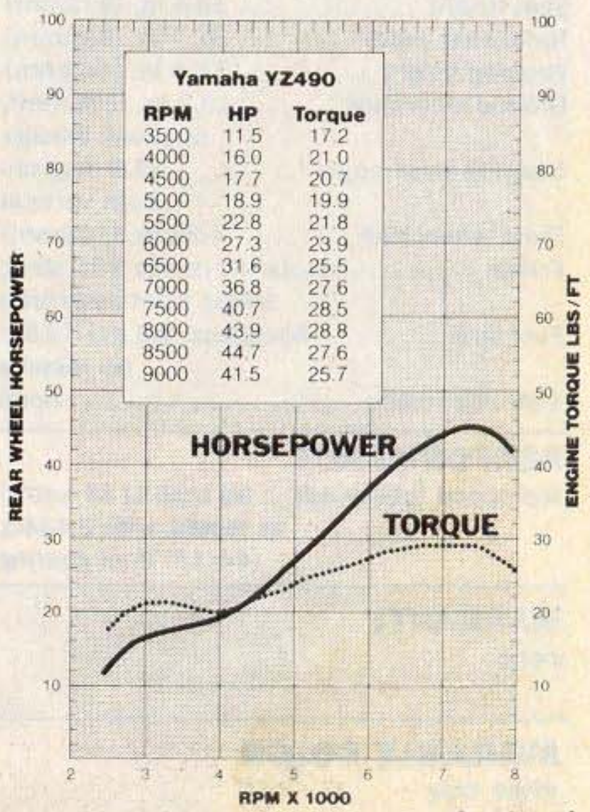












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CYCLE GUIDE SPECIFICATIONS

	MOTORCYCLE Can-Am 500MX	MOTORCYCLE Honda CR480R	MOTORCYCLE Husqvarna 500CR	MOTORCYCLE Kawasaki KX500
IMPORTER	Bombardier Corporation P.O. Box 6106 Duluth, Minnesota 55806	American Honda Motor Company, Inc. 100 West Alondra Boulevard Gardena, California 90247	Husqvarna Motor Corporation 4935 Mercury Street San Diego, California 92111	Kawasaki Motors Corp. 2009 East Edinger Avenue Santa Ana, California 92711
SUGGESTED RETAIL PRICE	$2880	$2398	$2895	$2399
ENGINE				
Type	two-stroke vertical single	two-stroke vertical single	two-stroke vertical single	two-stroke vertical single
Port arrangement	one reed-valve-controlled intake, four main transfers, two booster transfers, one exhaust	one reed-valve-controlled intake, four main transfers, one booster transfer, one exhaust	one reed-valve-controlled intake, four main transfers, one booster transfer, one exhaust	one reed-valve-controlled intake, four main transfers, two booster transfers, one exhaust
Bore and stroke	85.0mm x 85.0mm	89.0mm x 76.0mm	86.0mm x 84.0mm	86.0mm x 86.0mm
Displacement	482.3cc	472.8cc	487.9cc	499.6cc
Compression ratio (uncorrected)	12.0:1		9.5:1	
Compression ratio (corrected)		6.7:1		7.0:1
Carburetion	one 40mm Mikuni slide/needle	one 38mm Keihin slide/needle	one 40mm Mikuni slide/needle	one 38mm Mikuni slide/needle
Air filter	dual-stage washable oiled foam element	washable oiled foam element	dual-stage washable oiled foam element	dual-stage washable oiled foam element
Lubrication	pre-mixed fuel and oil	pre-mixed fuel and oil	pre-mixed fuel and oil	pre-mixed fuel and oil
Starting system	primary kick	primary kick	primary kick	primary kick
Ignition	flywheel-magneto CDI	flywheel-magneto CDI	internal-rotor magneto CDI	flywheel-magneto CDI
Charging system	none	none	none	none
DRIVETRAIN				
Primary drive	straight-cut gears; 2.821:1 ratio	straight-cut gears; 2.400:1 ratio	straight-cut gears; 1.795:1 ratio	straight-cut gears; 2.680:1 ratio
Clutch	wet, multi-plate	wet, multi-plate	wet, multi-plate	wet, multi-plate
Final drive	#520 chain (5/8-in. pitch, 1/4-in. width); 3.143:1 (44/14) ratio	#520 chain (5/8-in. pitch, 1/4-in. width); 3.857:1 (54/14) ratio	#520 chain (5/8-in. pitch, 1/4-in. width); 4.417:1 (53/12) ratio	#520 chain (5/8-in. pitch, 1/4-in. width); 3.071:1 (43/14) ratio
Gear / Internal gear ratio / Overall gear ratio / MPH per 1000 RPM				
I	2.913 / 25.831 / 3.00	1.800 / 16.663 / 4.64	1.706 / 13.523 / 5.69	2.000 / 16.463 / 4.68
II	2.000 / 17.735 / 4.37	1.412 / 13.069 / 5.92	1.300 / 10.306 / 7.46	1.455 / 11.973 / 6.43
III	1.480 / 13.124 / 5.90	1.158 / 10.719 / 7.22	1.043 / 8.272 / 9.30	1.182 / 9.728 / 7.91
IV	1.118 / 9.914 / 7.81	0.952 / 8.816 / 8.78	0.880 / 6.976 / 11.03	0.955 / 7.857 / 9.80
V	0.913 / 8.096 / 9.56	0.783 / 7.245 / 10.68		0.792 / 6.517 / 11.81
SUSPENSION/WHEEL TRAVEL				
Front	Marzocchi air-spring, 43mm stanchion tube diameter/11.6 in. (295mm)	Showa air-spring, 43mm stanchion tube diameter, 14-position adjustable compression damping/12.0 in. (305mm)	Husqvarna air-spring, 40mm stanchion tube diameter/11.8 in. (300mm)	Kayaba air-spring, 43mm stanchion tube diameter, compression-damping blow-off valve infinitely variable within 15 turns of adjusting screw/11.7 in. (297mm)
Rear	single Ohlins shock, 44-position simultaneously adjustable compression and rebound damping, 10mm spring preload range/12.0 in. (305mm)	single Showa shock, 12-position adjustable compression damping, 20-position adjustable rebound damping, 15mm spring preload range/12.3 in. (312mm)	dual Ohlins shocks, 10-position adjustable spring preload/12.8 in. (325mm)	single Kayaba shock, 4-position adjustable rebound damping, 18mm spring preload range/11.9 in. (302mm)
BRAKES				
Front	drum, single-leading shoe	drum, double-leading shoe	drum, double-leading shoe	single-action hydraulic caliper, 8.3-inch (210mm) effective disc diameter
Rear	drum, single-leading shoe, rod-operated	drum, single-leading shoe, straight-pull cable-operated	drum, single-leading shoe, rod-operated	drum, single-leading shoe, straight-pull cable-operated
TIRES				
Front	3.00-21 Dunlop Sports K139	90/80-21 Bridgestone Motocross M33	3.00-21 Trelleborg Deep Grip T544 Motocross	3.00-21 Dunlop Sports K490
Rear	5.10-18 Dunlop Sports K190	150/80-18 Bridgestone Motocross M32	5.00-18 Pirelli Sandcross MT32	5.10-18 Dunlop Sports K490
DIMENSIONS AND CAPACITIES				
Weight	250 lbs. (113.4kg)	226 lbs. (102.5kg)	240 lbs. (108.8kg)	232 lbs. (105.2kg)
Weight distribution	47.0% front, 53.0% rear	48.5% front, 51.5% rear	47.1% front, 52.9% rear	47.8% front, 52.2% rear
Wheelbase	59.6 to 60.8 in. (1515 to 1544mm)	58.2 to 59.4 in. (1479 to 1509mm)	57.7 to 58.5 in. (1466 to 1482mm)	58.1 to 59.4 in. (1476 to 1509mm)
Seat height	38.6 in. (972mm)	38.3 in. (974mm)	38.0 in. (965mm)	37.9 in. (962mm)
Handlebar width	32.7 in. (830mm)	32.5 in. (825mm)	31.9 in. (810mm)	32.5 in. (825mm)
Footpeg height	17.4 in. (443mm)	17.0 in. (432mm)	17.2 in. (438mm)	16.7 in. (425mm)
Ground clearance	13.2 in. (336mm), at shock linkage	13.7 in. (347mm), at engine cradle	13.5 in. (343mm), at engine cradle	12.8 in. (326mm), at engine cradle
Steering head angle	28.0 degrees from vertical	26.0 degrees from vertical	30.0 degrees from vertical	29.0 degrees from vertical
Front wheel trail	4.24 in. (108mm)	3.86 in. (98mm)	5.51 in. (140mm)	4.80 in. (122mm)
Frame	tubular Reynolds 531 steel, single front downtube	tubular chromoly steel, single front downtube	tubular chromoly steel, single front downtube	tubular chromoly steel, single front downtube
Fuel tank	fiberglass, 2.5 gal. (9.5*l*), no reserve	plastic, 2.6 gal. (10.0*l*), no reserve	aluminum, 2.8 gal. (10.5*l*), no reserve	plastic, 2.5 gal. (9.5*l*), no reserve
Instrumentation	none	none	none	none
PERFORMANCE				
Top speed (observed)	86 mph (138 km/h) as tested, with 2.444:1 (44/18) final gearing	81 mph (130 km/h)	81 mph (130 km/h) as tested, with 4.667:1 (56/12) final gearing	88 mph (142 km/h)
WARRANTY	none	none	30 days on engine and frame only	none
AVAILABLE COLOR	white only	red only	white only	green only.

MOTORCYCLE KTM MC 495	MOTORCYCLE Maico 490 Spider	MOTORCYCLE Suzuki RM500	MOTORCYCLE Yamaha YZ490K
KTM America Inc. 1900 Broadway Lorain, Ohio 44052	Maico West 110 East Santa Anita Avenue Burbank, California 91502	U.S. Suzuki Motor Corporation 3251 East Imperial Highway Brea, California 92621	Yamaha Motor Corporation USA 6555 Katella Avenue Cypress, California 90630
$2875	$2835	$2399	$2449
Type ..... two-stroke vertical single Port arrangement ..... one reed-valve-controlled intake, four main transfers, three booster transfers, one exhaust Bore and stroke ..... 92.25mm x 74.0mm Displacement ..... 494.6cc Compression ratio (uncorrected) ..... 9.6:1 Carburetion ..... one 40mm Bing slide/needle Air filter ..... dual-stage washable oiled foam element Lubrication ..... pre-mixed fuel and oil Starting system ..... primary kick Ignition ..... flywheel-magneto CDI Charging system ..... none	Type ..... two-stroke vertical single Port arrangement ..... one reed-valve-controlled intake, four main transfers, one booster transfer, one exhaust Bore and stroke ..... 86.5mm x 83.0mm Displacement ..... 487.8cc Compression ratio (uncorrected) ..... 12.0:1 Carburetion ..... one 40mm Bing slide/needle Air filter ..... dual-stage washable oiled foam element Lubrication ..... pre-mixed fuel and oil Starting system ..... primary kick Ignition ..... internal-rotor magneto CDI Charging system ..... none	Type ..... two-stroke vertical single Port arrangement ..... one reed-valve-controlled intake, six main transfers, one exhaust Bore and stroke ..... 88.5mm x 80.0mm Displacement ..... 492.1cc Compression ratio (corrected) ..... 6.2:1 Carburetion ..... one 38mm Mikuni rectangular-slide/needle Air filter ..... twin dual-stage washable oiled foam elements Lubrication ..... pre-mixed fuel and oil Starting system ..... primary kick Ignition ..... internal-rotor magneto CDI Charging system ..... none	Type ..... two-stroke vertical single Port arrangement ..... one reed-valve-controlled intake, four main transfers, one booster transfer, one exhaust Bore and stroke ..... 87.0mm x 82.0mm Displacement ..... 487.5cc Compression ratio (corrected) ..... 7.4:1 Carburetion ..... one 38mm Mikuni slide/needle Air filter ..... dual-stage washable oiled foam element Lubrication ..... pre-mixed fuel and oil Starting system ..... primary kick Ignition ..... flywheel-magneto CDI Charging system ..... none
Primary drive ..... straight-cut gears; 2.548:1 ratio Clutch ..... wet, multi-plate Final drive ..... #520 chain (5/8-in. pitch, 1/4-in. width); 3.714:1 (52/14) ratio	Primary drive ..... straight-cut gears; 2.129:1 ratio Clutch ..... wet, multi-plate Final drive ..... #520 chain (5/8-in. pitch, 1/4-in. width); 3.714:1 (52/14) ratio	Primary drive ..... straight-cut gears; 2.385:1 ratio Clutch ..... wet, multi-plate Final drive ..... #520 chain (5/8-in. pitch, 1/4-in. width); 3.286:1 (46/14) ratio	Primary drive ..... straight-cut gears; 2.625:1 ratio Clutch ..... wet, multi-plate Final drive ..... #520 chain (5/8-in. pitch, 1/4-in. width); 3.286:1 (46/14) ratio

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	1.500	14.198	5.32
II	1.167	11.043	6.84
III	0.950	8.992	8.40
IV	0.778	7.362	10.25

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.067	16.343	4.64
II	1.556	12.301	6.17
III	1.190	9.414	8.06
IV	0.958	7.578	10.01

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.000	15.670	4.88
II	1.556	12.188	6.28
III	1.211	9.485	8.07
IV	0.955	7.479	10.23

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	1.750	15.094	5.15
II	1.316	11.349	6.85
III	1.045	9.017	8.62
IV	0.833	7.188	10.81

Front ..... Marzocchi air-spring, 41.5mm stanchion tube diameter/11.9 in. (301mm) Rear ..... single White Power shock, 8-position adjustable compresson damping, 12-position adjustable rebound damping, 25mm spring preload range/12.4 in. (316mm)	Front ..... Maico air-spring, 41.5mm stanchion tube diameter/11.8 in. (300mm) Rear ..... single Ohlins shock, 44-position simultaneously adjustable compression and rebound damping, 10mm spring preload range/12.2 in. (309mm)	Front ..... Kayaba air-spring, 43mm stanchion tube diameter, compression damping infinitely variable within 8 turns of adjusting screw/11.9 in. (302mm) Rear ..... single Kayaba shock, 4-position adjustable compression damping, 4-position adjustable rebound damping, 16mm spring preload range/12.8 in. (326mm)	Front ..... Kayaba air-spring, 43mm stanchion tube diameter/11.8 in. (300mm) Rear ..... single Yamaha shock, 20-position adjustable compresson damping, 25-position adjustable rebound damping, 25mm spring preload range/12.5 in. (318mm)
Front ..... double-action hydraulic caliper, 9.0-in. (228mm) effective disc diameter Rear ..... drum, single-leading shoe, rod-operated	Front ..... drum, single-leading shoe Rear ..... drum, single-leading shoe, rod-operated	Front ..... drum, double-leading shoe Rear ..... drum, single-leading shoe, straight-pull cable-operated	Front ..... drum, double-leading shoe Rear ..... drum, single-leading shoe, straight-pull cable-operated
Front ..... 3.00-21 Metzeler Motocross 3E Rear ..... 5.10-18 Metzeler Perfect Cross	Front ..... 3.00-21 Metzeler Motocross 4E Rear ..... 4.50-18 Metzeler Motocross 4E	Front ..... 100/80-21 Bridgestone Motocross M33 Rear ..... 140/80-18 Bridgestone Motocross M32	Front ..... 100/80-21 Bridgestone Motocross M33 Rear ..... 150/80-18 Bridgestone Motocross M32
Weight ..... 249 lbs. (112.9kg) Weight distribution ..... 46.6% front, 53.4% rear Wheelbase ..... 58.2 to 59.5 in. (1478 to 1510mm) Seat height ..... 36.8 in. (935mm) Handlebar width ..... 32.2 in. (820mm) Footpeg height ..... 16.1 in. (409mm) Ground clearance ..... 12.4 in. (316mm), at engine cradle Steering head angle ..... 28.0 degrees from vertical Front wheel trail ..... 4.21 in. (107mm) Frame ..... tubular chromoly steel, single front downtube Fuel tank ..... plastic, 2.8 gal. (10.5*l*), no reserve Instrumentation ..... none	Weight ..... 240 lbs. (108.8kg) Weight distribution ..... 47.5% front, 52.5% rear Wheelbase ..... 58.7 to 59.6 in. (1491 to 1520mm) Seat height ..... 38.5 in. (978mm) Handlebar width ..... 32.5 in. (825mm) Footpeg height ..... 16.3 in. (415mm) Ground clearance ..... 11.3 in. (286mm), at shock linkage Steering head angle ..... 27.0 degrees from vertical Front wheel trail ..... 4.72 in. (120mm) Frame ..... tubular chromoly steel, single front downtube Fuel tank ..... plastic, 3.3 gal. (12.5*l*), including 0.8 gal. (3.0*l*) reserve Instrumentation ..... none	Weight ..... 234 lbs. (106.1kg) Weight distribution ..... 47.4% front, 52.6% rear Wheelbase ..... 58.0 to 59.1 in. (1474 to 1500mm) Seat height ..... 38.2 in. (970mm) Handlebar width ..... 31.7 in. (805mm) Footpeg height ..... 17.3 in. (440mm) Ground clearance ..... 14.5 in. (369mm), at engine cradle Steering head angle ..... 29.7 degrees from vertical Front wheel trail ..... 4.84 in. (123mm) Frame ..... tubular chromoly steel, single front downtube Fuel tank ..... plastic, 2.4 gal. (9.0*l*), no reserve Instrumentation ..... none	Weight ..... 227 lbs. (102.9kg) Weight distribution ..... 47.5% front, 52.5% rear Wheelbase ..... 58.7 to 59.8 in. (1490 to 1518mm) Seat height ..... 37.7 in. (956mm) Handlebar width ..... 32.1 in. (815mm) Footpeg height ..... 17.4 in. (443mm) Ground clearance ..... 13.7 in. (347mm), at engine cradle Steering head angle ..... 28.5 degrees from vertical Front wheel trail ..... 4.72 in. (120mm) Frame ..... tubular chromoly steel, single front downtube Fuel tank ..... plastic, 2.9 gal. (11.0*l*), no reserve Instrumentation ..... none
Top speed (observed) .. 83 mph (134 km/h)	Top speed (observed) .. 77 mph (124 km/h)	Top speed (observed) .. 85 mph (137 km/h)	Top speed (observed) .. 86 mph (138 km/h)
none	none	none	30 days on engine, frame, rear shock and swingarm only
white only	red only	yellow only	yellow only