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ON THE COVER: Ron Lawson, Troy Welty, Shaun Wynn, Jim Buntin and Chuck Dempsy wring out the 1991 Open-classes at El Mirage dry lake. Photo by Chris Hultner, cover design by DeWest, and color separations by Valley Film.

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BIG vs. BIGGER

*ATK 406 vs. Honda CR500
vs. Kawasaki KX500 vs.
KTM 300 MX vs. KTM 500 MX*

When dirt bikes first came to America in the '60s, Open-class machines were little more than oversized 250s, usually displacing around 360cc. The Euros had not much need for huge displacements but, as the sport grew in America, manufacturers felt it necessary to increase displacement to cure our Need for Speed. In America, the land of Cadillacs and ground-gobbling hot rods, bigger was better, so the engines grew, as did the overall weight of bikes, because power increases stressed frames and suspension more and more.

Juggling displacement and girth was a hit-or-miss deal back then. AJS went from 370cc to 410cc and promptly fell off the face of the earth. CZ went from 360 to 380 to 400, and this was good, but Suzuki went from 370 to a 400 and filled hospital rooms across the world. They went back to 370 quickly. Husqvarna made 360s and 400s but did a huge faceplant with the 450 in the mid-'70s and settled down to 390cc by the late '70s. In fact, some of the most hideous motorcy-

cles ever made were behemoth Open-classers. The KX420, CR450 and SC500 Yamaha leap to mind, like two-wheeled Freddy Kruegers. However, there were some good bikes, like the YZ400, Maico 440 and CR480, so displacements inched upward in the '80s.

Chart the displacement of Open-class motocrossers over the years and the line will look like the EKG of a Sierra Clubber as he realizes that the new neighbors have got *dirt*

bikes! They must be the new neighbors because they're *unloading the dirt bikes*, and they're *looking at the vacant lot across the street!* They're *pointing at the mounds of soil and smiling!* The overall curve races upward and upward until the bore is bigger than the environmentalist's eyeballs. Now we've got a full 500cc of pure terror from everybody except Suzuki and ATK. KTM even makes a 540cc desert bike.

1991 500cc MOTOCROSS SHOOTOUT

By the DIRT BIKE Staff



Which Open-classer will disappear over the horizon when the throttle is pinned? Check out this shootout and the related horsepower article to find out!

They also make a 300 which, when it was first introduced, displaced only 272cc. Now it's a 297. Husqvarna makes a 260cc enduro bike. ATK has built its empire around the versatile 406 (actually a 399). Maico makes a 320 as well as a 500 (neither of which was available for this test). To many, a full 500 is too much and a 250 is not enough, so mid-sized Open-classers are becoming popular once again.

Which is best—big or bigger? Can ease of riding make up for brute power? Does an extra 100cc or 200cc make that big a difference on a tight or slick motocross track? Let's twist the throttle and find out!

BRUTE POWER RATINGS

We wrung out the Open-classers on motocross tracks, trails and the dyno to get a handle on how much power is on tap for each bike (see "How Much Horsepower?"

in this issue for results of acceleration testing and dyno runs).

Kawasaki's KX500 is the King of Brute Acceleration. The 499cc mill simply walks away from the 499cc KTM, 491cc Honda and the smaller bikes. This was somewhat of a surprise, because KTM modified its 500's porting, intake and pipe for more power, while Kawasaki didn't make one motor mod from 1990 to '91. The KTM motor is awesome, but substandard shifting and suspension hinder putting all of that power to

the ground, so the KX wins the race up the hill or to the first turn. KTM takes second. Third goes to the CR500, which also is unchanged internally, aside from slight head and carb mods. The CR simply flattens out on top, then it's time to shift as the KX and KTM roost away.

ATK went for more power everywhere for 1991 through new porting, reeds and a longer silencer for the oversquare 399cc Rotax case-reed motor. The 406 builds revs slowly, compared to the 300 and 500s, but builds into an impressive top-end rush. In acceleration, it takes fourth ahead of the Katoom 300, which had the most motor modifications for 1991. The 297cc mill got new porting, pipe, power-valve hardware, ignition curve, two-ring piston and a larger airbox in hopes of finding *beaucoup* top-end power, but it's still a midrange motor. It revs further than any other Open-classer but it does not pull harder at peak revs.

All the big guns are fun to air out, but the KTMs are less fun to land than the Japanese and American bikes. Revolving brings the Austrian sleds up to snuff.



POWER MANAGEABILITY

What good is peak power if you're too scared to twist the throttle? If a machine bogs then violently leaps forward (or sideways), you're not going to have much fun riding it in slick conditions. Unmanageable power is useless power. Here's how the bikes rate on delivery, after jetting changes if needed.

Although the motor is hard-hitting and quick-revving, the KTM 300 has the best Open-class power delivery. Stock, the bike carburets very cleanly off the bottom, surges forward as the power valves open, then quits pulling hard. It's easy-to-ride, no-surprises power, the kind that makes long motos seem short. Next we have the CR500, which was also jetted in the ballpark as delivered. It has a very mellow low-end and toned-down midrange compared to past CRs, so it doesn't try to put you on your head when you goose the throttle. Third goes to the ATK, which has a slight hitch off of the very bottom, then climbs slowly and steadily into a shrieking top-end. Because of the dead zone in the basement, the ATK requires careful attention out of the gate or very slow corners, but it doesn't do anything unpredictable as revs build. Good stuff.

Both the KTM and Kawasaki 500s were

jetted very rich off the bottom, making them want to load up and burble instead of pull onto the pipe. Swap the 50 pilot for a 45 on the KTM. If you do a lot of trail riding, you may also want to trade the 40 slide for a 50 or swap the 268DQ needle jet for a leaner 266DQ. We cleaned up the KX500 by dropping the pilot from a 60 to a 55. Race Tech has a leaner needle (a R1370N for the stock N82M) that works well with the stock 60 pilot. With the two biggest bikes leaned out, they are equally violent. Both hit brutally hard and light up the rear tire or wheelie, forcing corrections and exacting a toll on the rider with a heavy throttle hand. At moto's end, the KX or KTM rider who doesn't concentrate on rolling on the throttle smoothly will be one whipped puppy. The K-500s tie for fourth.

PUTTING POWER TO THE GROUND

Suspension action and balance are the most important elements of putting Open-class power to full use. If the bike is skipping all over the track or has such a soft fork that you have to keep the throttle pinned all of the time, you'll end up looking like Popeye and riding like Olive Oyl. Hondas of the recent past have had brutally harsh suspension, but this year's efforts have put the

CR500 at the top of this category. Its fork has been totally redesigned, with the springs riding on top of the cartridge to fight oil contamination (past models had the cartridge inside the springs where they could rub together). The cartridge is 25 percent larger in diameter for more precise damping. Out back, a new Kayaba shock mates with a 250-style linkage, which has new bearings and thrust washers to reduce friction. The package is plush, progressive and well balanced, putting the CR above the rest in action. We only had to set sag and tweak a couple of clickers to dial the CR500 for any given rider.

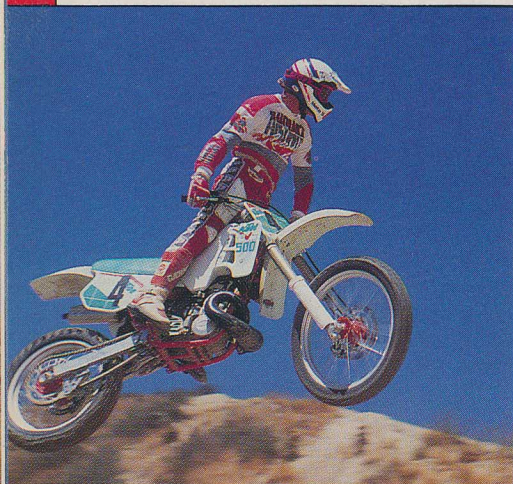
Likewise, the KX500 is much improved for 1991 and in the hunt for providing a smooth, controllable ride. The Jeff Ward Replica gets a Team Kawasaki-inspired Kayaba fork with 43mm lower leg (last year they were 41mm) and adjustable compression and rebound damping. Revised leverage and damping ratios are mated to a new, stiffer swingarm and lighter rear wheel, and the KX's shock action is as good as the Honda's. It is plush over the ripples yet firms up to control big hits, making the KX stable and predictable. The forks, although more adjustable than the CR's, don't isolate terrain from the rider as well as the Showas, so the overall package falls a tad short and into a solid second place.

Our ATK 406 came with the old-style White Power non-cartridge fork, but the Multi-Adjustor 4054s are available for an extra \$150. ATK did such a great job on valving that we'd keep the \$150 and opt for the old forks. It soaks up jolts and jumps better than any White Powers we've tested to date, but it did have more stiction than Showas or KYBs. A new swingarm offers both axle and roller adjusters to provide more wheelbase/chain adjustment, and the A-Trak chain-torque eliminator frees the White





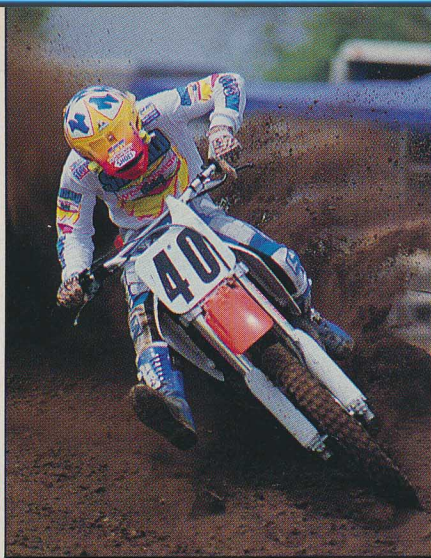
Willy Musgrave airs out the feather-light, agile ATK 406.



Brian Myerscough styles the KTM 500 over a San Bernardino USGP tabletop.

Power shock from having to deal with loads from the engine. The system provides excellent control over all terrain and is very efficient in putting the power to the ground, so much so that the ATK ranks a strong third. Some larger, hard-charging riders ranked the 406 above the CR and KX!

KTM made the most changes to their suspension for 1991. Seals and bushings at both ends have been redesigned to greatly reduce stiction and improve reaction to terrain. The MultiAdjuster White Power fork has totally revised damping rates and heavier standard springs on both the 300 and 500. Like the fork, the WP SuperAdjuster shock has new damping rates and more adjustment range in the clickers. Both the 300 and 500 forks felt best with the compression on #7 and rebound on #3, but neither could approach the action of the CR, KX or ATK. Initial travel is still comparatively harsh, and bottoming is a problem, even with the oil



Pete Murray likes the CR500's quick turning but wants more power.



Troy Welty usually rides RMs but feels right at home on the KTM 300MX.

level maxed out. Both bikes still ride front-end low, pointing to a too-soft spring rate, but heavier springs and backing off the compression don't alleviate the spike. Sadly, re-valving is the only solution. Rear action is also off the mark, compared to the other bikes. Low-speed rebound is quick, which is good for traction on hardpack, but the overall ride doesn't approach the quality of the CR, KX or ATK. The 300 takes fourth, and the 500 is last.

Let's break it down for clarity:

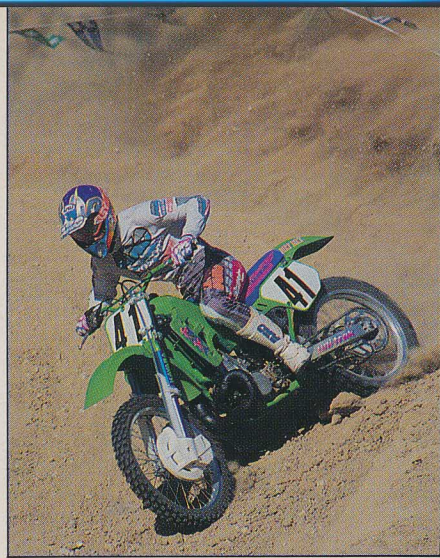
Fork: CR, KX, ATK, KTM 300, KTM 500.

Shock: CR and KX (tie), ATK, KTM 300, KTM 500.

HANDLING & TURNING

After power delivery and suspension action, chassis geometry and rigidity play a large part in how easy any bike is to ride, especially Open-classers. If you don't believe it, sling a leg over a Suzuki TM400 Cyclone, which on top of a violent powerband had strange geometry and a lot of frame flex. Fortunately, we've come a long way in two decades, and all of these bikes have decent manners, to an extent.

KTM's 300 MXer has the most potential locked within its chassis and has the best



Jamie Morbetta dusts off a hard-packed berm with a blast of KX500 power.

compromise between turning and stability. It is the easiest Open-classer to muscle through a corner, despite having the second-slowest steering-head angle (27.7 degrees). The soft forks decrease effective angle as they dive into the corner, and the bike is slim and light. It carves effortlessly and has the least punch when accelerating out of the corner. In a straight line, the bike ranks third. It has the tendency to nose into whoops and wander around up front in rough sweepers, but these are more the forks' fault than a chassis flaw. KTM aimed at the CR250R when designing this chassis, and the bullet was on target.

Second goes to the KX500, which is the most stable bike of the group but flails to fourth in corners. With a 27-degree head angle, the bike should rail corners, but it is a tall, wide motorcycle that doesn't like to follow ruts or settle into a turn as well as either the KTM or the CR500—but point it at a straight and pull the trigger, and the KX Five Honey will walk away from everything. It's rock-steady in whooped-out straights or sweepers and is hard to beat in the desert or on a high-speed MX track. Very hard to beat.

Next, we have another king of the desert, the KTM 500, which ranks second in stability and third in turns. Being an inch taller and ten pounds heavier than its smaller brother, it doesn't want to settle into grooved turns, and it's more of a handful over acceleration bumps. This is in spite of having steeper geometry than the 300 (27.5 degrees). Its higher center of gravity helps high-speed stability, like the KX500, but the stock suspension valving puts it behind the Green Machine on rougher terrain.

ATK's 406 is also a very stable bike, ranking a close fourth, but it is undoubtedly the hardest bike to turn, despite its radical 26-degree head angle. On paper it should carve up everything, but it has half the rear-wheel sag of the other bikes. This gives it the tallest in-the-saddle seat height, and the top of the bike is pretty wide. The ATK feels as big as the national debt in slow corners. In a straight line the 406 is very good—if you are



	ATK 406MX	HONDA CR500RM	KAWASAKI KX500	KTM 300MXC	KTM 500MXC
Engine type	Case-reed, air-cooled 2-stroke	Reed-valved, liquid-cooled 2-stroke	KIPS- and reed-valved, liquid-cooled 2-stroke	Case-reed and TVC-valved, liquid-cooled 2-stroke	Reed-valved, liquid-cooled 2-stroke
Displacement	399cc	491cc	499cc	297cc	497.4cc
Bore and stroke	84mmx72mm	89mmx79mm	86mmx86mm	72mmx73mm	89mmx80mm
Carburetion	38mm TMX Mikuni	38mm PJ Keihin	39mm PWK Keihin	37mm PJ Keihin	38mm flatslide Dellorto
Fuel tank capacity	2.3 gal. (XC: 4.7 gal.)	2.4 gals. (9L)	2.6 gal. (9.9L)	2.6 gal. (10L)	2.4 gal. (9L)
Gearing	16/46	15/51	14/47	14/48	14/52
Lighting coil	Yes	Optional	Optional	Optional	Optional
Spark arrester	Optional	No	No	Optional	Optional
Green sticker legal in stock form	Yes, w/SA	No	No	No	No
Running weight w/no fuel	221 lb.	235 lb.	232.5 lb.	225 lb.	235.5 lb.
Wheelbase	57 in. (1448mm)	58.9 in. (1496mm)	58.7 in. (1490mm)	58.4 in. (1485mm)	58.3 in. (1481mm)
Rake/trail	26°/4.8 in.	27.8°/4.5 in.	27°/4.6 in.	27.7°/4.8 in.	27.5°/4.8 in.
Ground clearance	13.5 in. (343mm)	13.8 in. (350mm)	14.6 in. (370mm)	15.2 in. (386mm)	15 in. (381mm)
Seat height	37 in. (940mm)	38.2 in. (970mm)	37.4 in. (950mm)	37.2 in. (945mm)	38 in. (965mm)
Tire size and type:					
Front	90/90-21 Pirelli Lagunacross	80/100-21 Dunlop K490	80/100-21 Dunlop K490	90/90-21 Metzeler All Cross	90/90-21 Metz. All Cross
Rear	100/100-18 Pirelli Lagunacross	110/100-18 Dunlop K695	100/100-19 Dunlop K695	120/20-19 Metzeler All Cross	130/80-19 Metz. All Cross
Suspension:					
Front	Inverted WP 4054, 11.8 in. (300mm) travel	Showa inverted cartridge, adj. comp., 12 in. (305mm) travel	KYB inverted cartridge, adj. comp./reb., 12.2 in. (310mm) travel	Inverted cartridge WP 4054, adj. comp./reb./prel., 11.8 in. (300mm) travel	Inv. cart. WP 4054, adj. comp./reb./prel., 11.8 in. (300mm) travel
Rear	A-Trak, WP aluminum piggyback, adj. comp./reb./prel., 13 in. (330mm) travel	Pro-Link, KYB aluminum piggyback, adj. comp./reb./prel., 12.8 in. (325mm) travel	Uni-Trak, KYB aluminum piggyback, adj. comp./reb./prel., 13 in. (330mm) travel	Pro-Lever, WP aluminum piggyback, adj. comp./reb./prel., 12.6 in. (320mm) travel	Pro-Lever, WP alum. piggyback, adj. c./r./p., 13.2 in. (335mm) travel
Country of origin	U.S.A.	Japan	Japan	Austria	Austria
Suggested retail price	\$4290	\$4098	\$4049	\$4279	\$4239
Distributor/Manufacturer	ATK Motorcycles, USA 5430 Union Pacific Ave. City of Commerce, CA 90022 (213) 722-8880	American Honda Motor Corp. 100 W. Alondra Blvd. Gardena, CA 90247 (213) 327-8280	Kawasaki Motor Corp. 9950 Jeronimo Rd. Irvine, CA 92718 (714) 770-0400	KTM East 1906 Broadway Lorain, OH 44052 (216) 244-2726	KTM West 930 Fesler St. El Cajon, CA 92020 (619) 258-6300

REPLACEMENT PART COSTS

Piston	180.60**	54.44	51.50	176.18*	153.01*
Ring	70.30	26.51	21.04	29.17 (2)	38.51
Clutch plate (f)	14.50 (8)	6.26 (8)	8.72 (8)	12.5 (9)	13.16 (9)
Clutch plate (m)	6.75 (8)	6.18 (7)	5.93 (7)	7.00 (8)	4.89 (10)
Front sprocket	29.50	11.90	17.58	21.64	21.64
Rear sprocket	60.00	54.80	60.30	57.71	51.82
Front brake pads	29.00	21.85	32.00	22.95	22.95
Rear brake pads	36.00	21.85	32.00	22.95	22.95

*Kit includes ring(s), wrist pin and circlips. **Piston w/rings

in the hammer mode. Back off the throttle and the bike will kick and shake its head. This bike demands to be ridden hard and exacts a big price from those who don't.

Likewise, the Honda is demanding. It is the least stable but ranks second in carving ability. It has the slowest-steering head angle (27.8 degrees) but will occasionally shake its head in throttle-off situations. It also is very busy at speed, even though it has top-notch suspension action. All of the other

bikes are more forgiving, so the Honda rider really has to give full concentration on high-speed sections. On the other hand, turning the CR500R takes almost zero effort. It rails berms, squares smooth corners and follows ruts with minimal rider input. On tighter tracks the big CR is hard to beat and is definitely the best of the full 500s.

Breaking it down we have:

Turning: KTM 300, CR500, KTM 500, KX500, ATK.

Stability: KX, KTM 500, KTM 300, ATK, CR500.

LIFE WITH THE BEASTS

Cleaning the air filter on the KTM 500 doesn't require any tools, but the air snorkel is a bit restrictive. Cut out the top (rearward) section of the box and tape over for muddy conditions. Carb access is good, but Dellorto jets are on the expensive side (we dropped the pilot one size). Plug access is good, and we didn't foul any plugs. The 500

HOW MUCH IS ENOUGH?

Earth's 5 most powerful motocrossers battle on the track & on the dyno

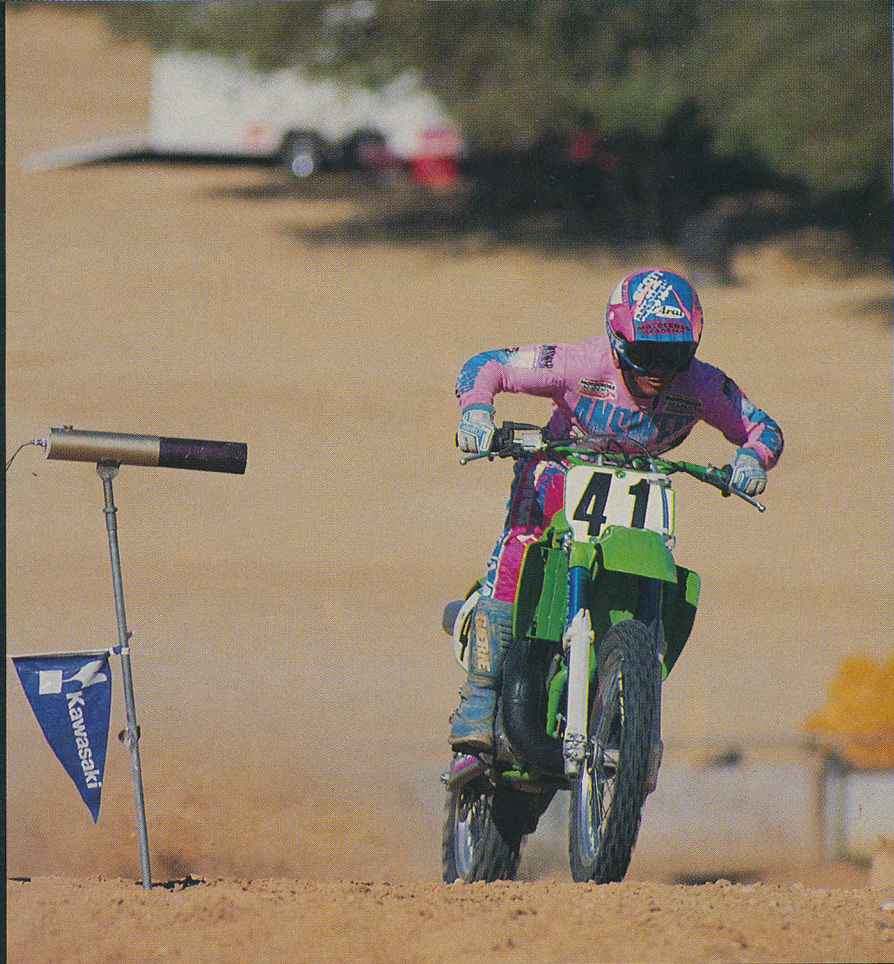
By the DIRT BIKE Staff

A long, long time ago, it was simple. If you wanted to go faster, you found more horsepower. Power meant quicker lap times. Power meant better starts. Power meant more wins.

Then, somewhere along the way, the issue got confused. Riders on 125s started going faster than riders on 500s and all the rules stopped making sense. Even in the Open class, you could never tell who had the advantage—riders on slightly overbored 250 Kawasakis were racing against riders on 600cc ATKs. It became clear that suspension and handling were more important than raw horsepower on the track. Nowadays, no one will even argue that point.

How about the start? There, surely, the bike with the most horsepower wins. Or does it? What's the truth? Does horsepower make a difference *anywhere* anymore?

We wanted to know. That's why we set up a two-part test. First, the five Open bikes in this month's shootout would be taken to Paul Thede's Race Tech and put on the dyno. That would tell us which one makes the most horsepower on paper. Then the same bikes would go to DeAnza Cycle Park (Moreno Valley, California) and be timed from the starting gate to the first turn. That would



Hi-tech times: When Donnie Hansen would rocket to the top of DeAnza's start hill, a set of electronic beams would capture his ET—same rider on the same hill with five different bikes.

tell us which one has the most holeshot potential in the real world. Would the bikes stack up in the same order? We didn't have a clue.

WHAT IS HORSEPOWER?

At Race Tech, we learned a lot about horsepower. The term "horsepower" originated in the 1800s. One horsepower was defined as the power needed to lift 33,000

pounds one foot in the time of one minute. Someone figured a single horse could do that, but the truth is that it would have to be a very strong horse—maybe two strong horses. Then someone invented the dynamometer, which could measure the amount of twisting force a motor could produce at any given moment. To figure out horsepower, you take the torque figure that the dyno

THE TRUTH ABOUT HORSEPOWER!

doesn't have the neat adjustable levers like its 297cc cousin, but we can live with that. What we can't live with is suspension that defies tuning with springs, oil level or spinning clickers and a rear muffler mount that breaks. Last year's bike had an extended rear subframe member and two muffler mounts. The '91 has one, and it broke twice so far.

Getting at the ATK's air filter requires an 8mm wrench to remove the cover and a screwdriver to loosen the two-stage sock filter. The hose clamp slides down the plenum chamber, which is a hassle. Some riders complain of the rear brake being too touchy. The ATK owner gets two needles and mains for the TMX carb, which doesn't use a pilot jet. We fouled two plugs during testing, although the bike wasn't overly rich. Shifting is a bit notchy, and the bike doesn't have the modern, adjustable Magura perches. Nothing broke, fell off or leaked, though. Apply Loctite to the front and bottom

motor-mount bolts on the KTM 300 or they will loosen and elongate the holes on the mounts. This will eventually cause kickstarter contact with the frame when starting. Also use Loctite on the sprocket bolts and rear brake pivot bolt. The power valve can be adjusted to kick in sooner or later by removing or adding spacers to the governor spring. Goop Silicone Seal onto the right power valve cover to prevent seepage. Plug access is excellent and air filter access requires seat removal, but a clip holds the filter in place. The clip cannot come loose unless you lose your seat. We also broke the muffler on the 300, but it was crash-related. A right-side get-off bent it inward, and the tire made contact, ripping it off.

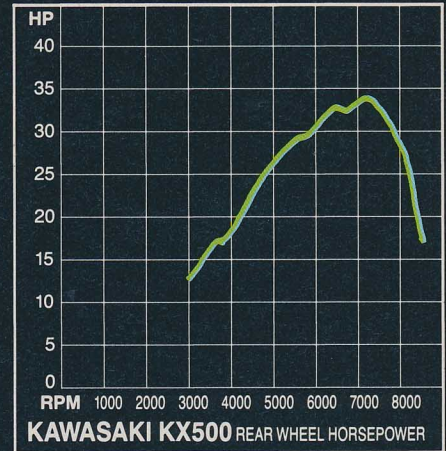
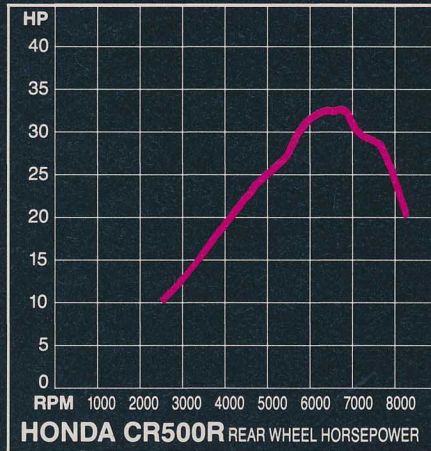
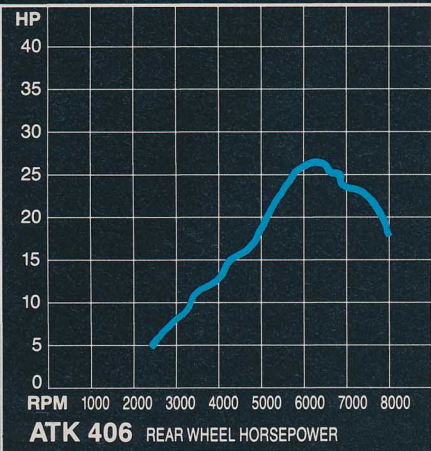
Vibration is annoying on the KX500, but the extra-wide footpegs are a big plus. So are the rotating vents on the roomy airbox. Open for more flow in favorable conditions; close for heavy dust or mud. The front disc

guard is also a nice touch. Nothing broke, ripped or loosened on our test bike. We did have trouble getting the bike to clean out until we cleaned up low-speed jetting, but we never fouled a plug. A twin-piston front brake caliper is new, and brakes at both ends are excellent. Cold starting is greatly speeded by putting the bike in gear and rocking it forward and backward to charge the cylinder. This works well on all large two-strokes.

We have yet to foul a plug or have anything break on our CR500R. It starts easily, hot or cold, and doesn't vibrate excessively. Brakes at both ends are excellent. Detailing is top-notch. No other bike has as many welded-on backup nuts, so working on the Honda is a joy. The airbox is roomy; as is spark plug access. Ergonomics are excellent. So is the owner's manual. About the only thing we can find to snivel about is that the chain doesn't last as long as those on the K-bikes or ATK.

DYNAMOMETER RESULTS

	ATK 406	Honda CR500R	Kawasaki KX500	KTM 500	KTM 300
Max. horsepower	26.8@6200 rpm	32.3@6250 rpm	33.5@7000 rpm	35.0@6850 rpm	28.2@8400 rpm
Max. torque	23.1 ft.-lb.@5500 rpm	28.4 ft.-lb.@5500 rpm	27.4 ft.-lb.@5000 rpm	28.6 ft.-lb.@6000 rpm	18.1 ft.-lb.@8000 rpm
Main jet	310 (dyno runs only)	175	172	175	195
Acceleration times, 250 feet, uphill	5.00 sec.	4.92 sec.	4.78 sec.	4.99 sec.	5.12 sec.

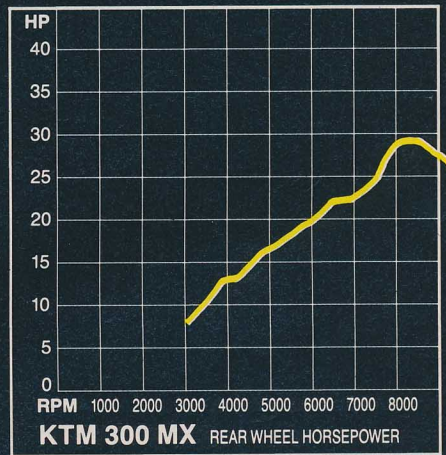


gives you, multiply it times the rpm the engine is turning, and divide by 5252. Why 5252? Who knows? Maybe it was someone's address.

That formula gives a natural bias to high-rpm motors. For example, look at the curves for the ATK and the KTM 300. The KTM appears to be more powerful, peaking with 28.2hp, compared with 26.8 for the ATK, but the truth is that the ATK made a much higher torque number on the dyno. It's just that the ATK did it at low rpm, so it's simply a matter of mathematics that the final horsepower figure would be lower than the KTM's, which peaks 2000 rpm higher. The ATK's torque high point is 23.1 foot-pounds at 5500 rpm. The most the KTM could manage was 18.1 at 8000 rpm.

There are other misleading aspects of horsepower numbers:

- When a motorcycle is being tested on



the dyno, its throttle always is wide open. The rpm level is controlled with a large brake, not by twisting the grip. That means

you can't look at a dyno curve and get any idea about what low-range jetting or throttle response is like for a particular engine.

WHO WINS—BIG OR BIGGER?

Look down the starting gate at a 500 National and you'll see red and green almost exclusively. The same holds true at the 500 Experts at Chicken Licks Raceway. For the Veteran classes, though, you'll see a lot of ATKs and KTM 300s mixed with a bunch of 250s and a few 500s. These grizzly old guys have to go to work on Monday morning, so they opt for the smaller, easier-to-ride bikes. So look at your abilities and tracks before making the decision on whether to go big or bigger.

Of the 500s, the Kawasaki is the king of putting brute power to the ground, but it's a very big motorcycle. How diminutive Jeff Ward has hung onto his KX500 for two consecutive 500 National Championships is beyond comprehension. It's also a great cross-country machine, as Larry Roeseler's Baja 1000 wins show. The KX500 has the best combination of brute power, suspension and

handling, but it's a handful on twisty, tight tracks.

Likewise, the KTM 500 is a killer motor in a great chassis, but it's held back by confused suspension and a tall Euro feel, stock. We had a chance to ride a works 500GP bike, which had little more than suspension revalving and an aftermarket pipe, and we were impressed. There's a lot of potential locked inside the stocker, potential that can be uncorked for around \$500. The same can be said for the 300. We like the chassis better than the Old World 500 layout, and the motor is very manageable. It is an excellent overall package, once you invest in some suspension work.

ATK's Open-classer demands to be hammered around a track like a 125, and it feels like one, compared to the 500s. Light weight, a screamer top-end and nonexistent bottom-end make it seem like a 125—the world's tallest 125. It's a great-handling bike that has

excellent suspension, but it takes a long time to adapt to the tall seat height. Ride on the pegs, like Marty Tripes, and it wails. Try to put your foot down in a slow turn, and you'll feel like Wile E. Coyote just before he plunges into the canyon.

Honda has best bridged the gap between brute power and manageability. The '91 CR500R isn't quite as fast as the 500KX or KTM on top, but it feels like a midsize bike out of corners. Suspension and turning are excellent, but it is very busy at speed. This is the only real flaw, and a pro will have to do some motor work to make it run with a KX500, but the stock CR500 is the best compromise between brute power and ease of riding.

Overall, here's how our test crew of Novices, Vets, Intermediates and Experts rated the Open-class monsters: 1. Honda; 2. Kawasaki; 3. ATK; 4. KTM 300; 5. KTM 500. □

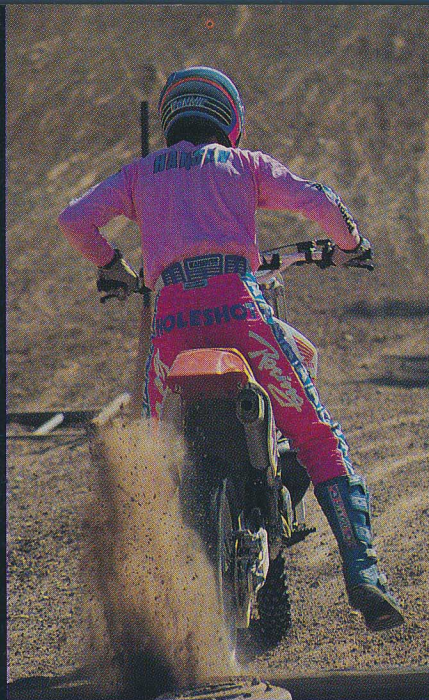
- No two dynos are alike. You can't compare numbers taken from one dyno with those taken from another. The peak power figures from Race Tech might look a little low to you. If that really bothers you, then just double all the numbers (we don't mind). There's that much variation from dyno to dyno. Testing done at Race Tech was consistent and repeatable—that's all that's important for comparing these bikes.

- On the dyno, motorcycles don't run like they do in the real world. An engine's exhaust gas temperature is much lower when a bike is being ridden around a track than it is when its horsepower is being measured. That affects output. The only compensation possible is to use race gas and install larger main jets, which, of course, also affects output. What's a mother to do?

During our test sessions we used Trick Racing gas in all the bikes. We also kept a close watch on exhaust gas temperatures, and, when needed, increased jet sizes. That affected the figures, but not as much as a hole in the piston would.

WHO'S GOT THE MOST?

KTM 500 wins the horsepower contest, hands down. It made the most horsepower and also had the broadest powerband. What



◀ Donnie Hansen's starting technique was flawless. That's why they called him "Holeshot."

the other bikes produced the same figures, over and over again.

Second place was the Kawasaki, and third went to the Honda, which just signed off a little earlier. Next came the KTM 300 and the ATK. As expected, the big bikes triumphed over the little bikes in the horsepower contest—but what about the real world?

ON THE LINE

For our acceleration contest we put brand-new Bridgestone M22 rear and M23 front tires on all the bikes as a control measure. DeAnza's start hill is dry and hard-packed, and over the years we've found that nothing works better than the Bridgestones in those kinds of conditions. As another control, we enlisted the help of Donnie "Holeshot" Hansen to ride the bikes up the hill. In his days as a factory rider for Honda and Can-Am, Hansen developed a reputation as the king of the start. Today, he runs Donnie Hansen's Motocross Academy and holds training camps in the Sacramento area, plus shorter classes in other areas.

To catch Hansen's time to the first turn,

SLOWER IS FASTER

Ever wonder how fast an Open MXer would go unshackled from its motocross gearing? Sure you have, but few people go much further than wondering. Who can blame them? A paved surface is usually the best place to do speed testing, but Open-class motocross bikes can be very expensive to operate on the street (just ask any police officer) no matter how fast you're planning to go. Then there's the idea of actually going more than 100 mph on a dirt bike, a vehicle that was never intended to travel at such speeds. Way back in 1981, when Open-class motocrossers were as burly as they've ever been, we decided to do a top-speed test. The decision was simple. Choosing a bike was simple—KTM's fire-snooting 495 had power that made atomic weapons pale in comparison. Finding a rider took a little doing.

Super Hunky insisted that he stay with the ground crew to keep the speed measurements honest. The rest of the staff suddenly remembered other pressing stories they had to attend to. The normally speed-crazed racing types we usually contacted became curiously safety-conscious. Then Rod Bush, President of KTM America, stepped forward. Talk about standing behind a product!

When the dust settled after the best run of the day, the KTM had an incredible answer for our "how fast" question—123 mph!

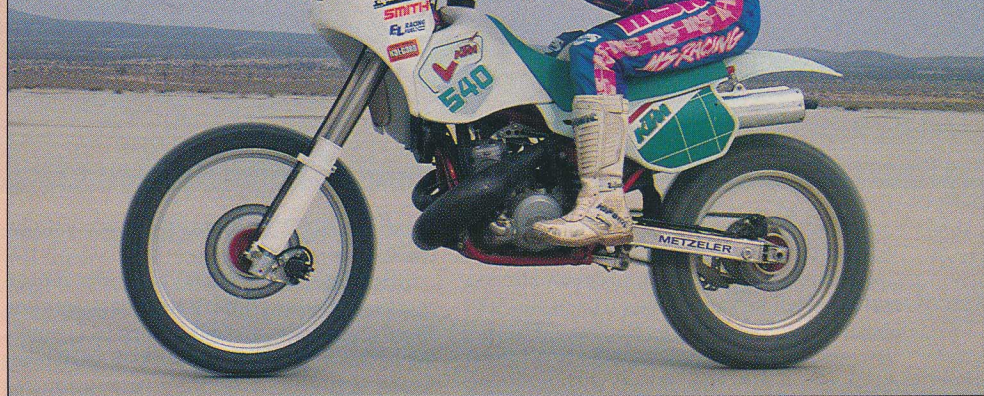
Things have changed since that first test ten years ago, but the "how fast" question is still an interesting one, and today KTM is making a bike that looked as perfect for the test as the old 495, the 540DXC. We kept the ground rules of the test the same as they were ten years ago: give an Open-class dirt bike the tallest gearing it can pull and see

was weird, though, was that it wouldn't always produce the most horsepower. Sometimes it would cough or have wild surges and we would have to do the run again. All of

WORLD'S FASTEST DIRT BIKE REVISITED

Top speed isn't everything

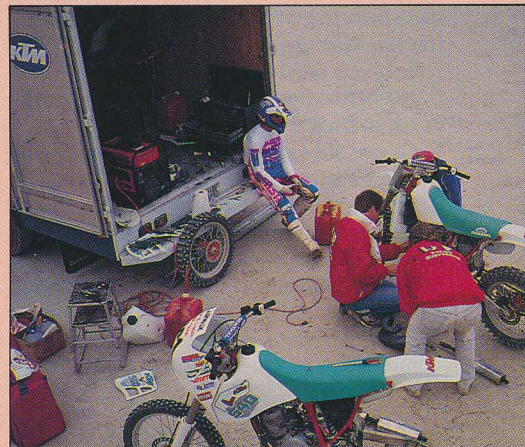
By the DIRT BIKE Staff



Riding a dirt bike at triple-digit speeds sounds hairy, but the locomotive-steady KTM felt stable, even in the rough slow-down area at the end of the dry lake.

KTM pulled out all the stops to beat the old speed record we set with one of their bikes ten years ago. They gave us all the support their top GP riders get. ▶

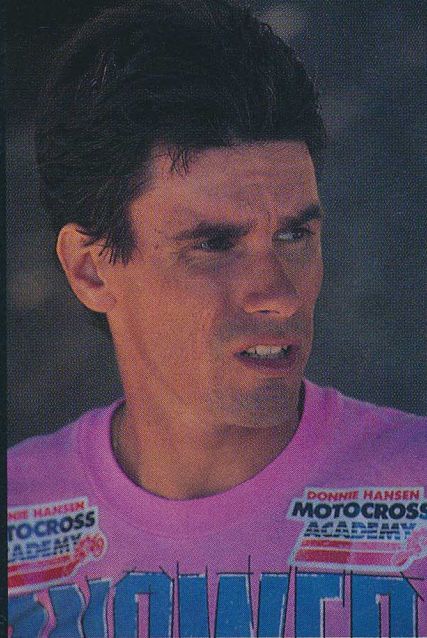
how fast it goes. No Bonneville bullet fairings. No Swiss-cheesed cylinders. Just a dirt bike going as fast as it can on knobby tires on dirt, the way regular dirt bikes are ridden. We could have dragged a bit more speed



we borrowed drag race timing lights from the Saddleback Hillclimbers Association. The hillclimbers use the lights to time hillclimbs in competition, but for our purposes they would measure the time it took to reach the first turn. When Hansen's wheel would break a light beam in front of the start gate, a timer would measure, in hundredths of a second, how long it would take him to reach another light beam at the top of DeAnza's start hill.

It didn't take Hansen long to get the most out of each bike. Watching him was like getting a free class. "There are three points to getting a good start," he said later. "You have to have good timing, you have to keep the bike straight and you have to get maximum traction. It's all in throttle application and body english, and once you fully open the throttle, never back off. If you get crooked or lose traction, it's better to pull in the clutch slightly for correction."

We watched and learned as he made four or five runs on each bike. The quickest? It wasn't the horsepower king KTM 500 at all. Instead, the Kawasaki roosted up the hill significantly faster than any of the others. In its very first run, the KX reached the first turn in 4.78 seconds. The best run for the



second-place Honda was 4.92 seconds. The KTM 500 did it in 4.99 seconds, while the ATK scored a 5.00 and the KTM 300 got 5.12. To put that in perspective, if the bikes

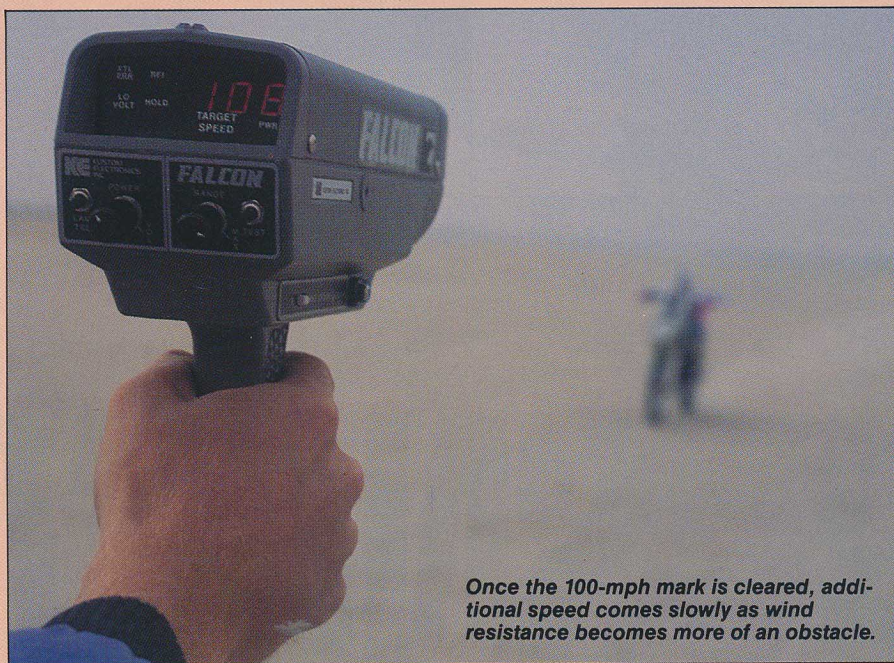
◀ **What's Donnie Hansen been doing since his winning days? Aside from testing Open-classers for DIRT BIKE, he runs Donnie Hansen's Motocross Academy.**

were going 45 mph when they reached the first turn, there would be well over three bike lengths between the KX and the KTM 300.

WHAT'S IT ALL MEAN?

For one thing, it means that horsepower is an important factor in reaching the first turn first, but weight distribution, power delivery, throttle response, gearing and tractability also have to be taken into consideration. None of those things show up on a dyno curve. For proof, just look at the KTM 500 and the ATK 406. The KTM was the baddest bike in the valley when it came to horsepower, and the ATK was the weakest. Yet they were only 1/100th of a second different in their ability to reach the first turn. The Kawasaki was the fastest in the real world, but only second in the dyno wars.

We'll admit that horsepower is still a good thing to have on your side. Always has been. Just remember, though, next time you're racing to the first turn, that it isn't the *only* good thing. □



Once the 100-mph mark is cleared, additional speed comes slowly as wind resistance becomes more of an obstacle.

out of the bike on pavement, or by going closer to sea level, but we went back to El Mirage dry lake, in the Southern California high desert, which was the site of the 1981 test, just to keep things in perspective.

KTM made sure our 540 was ready. The engine and ignition were checked; both were found to be in place and working well. They installed their thickest base gasket (KTM has three thicknesses for most of their bikes to suit customers' engine tuning and assembly needs) to lower the compression so the engine would rev as high as possible. The tallest final gearing that would fit on the machine,

a 16-tooth countershaft sprocket and a 40-tooth rear-wheel sprocket, were installed. A Metzeler Motocross rear tire was chosen because of its tall profile. Larger tire diameter equals taller gearing, you know.

We were all set to murder the old record: 540 liquid-cooled cubic centimeters of ground-gobbling power. We couldn't wait to get the bike out to the dry lake. When we finally did, the radar gun showed 108 mph on our first pass. Fast, but not even in the same area code as 123 mph. We all knew every mile per hour past the magic century was going to be about 100 times harder to find

than the first 100. Wrenches, guided by the skilled hands of KTM factory technicians, began twirling. Parts were jumping on and off the bike like confused fleas from the moment after our first early-morning run until well into the afternoon. Different jets, a different carb, taller gearing, radiator shrouds (off), Baja fairing (on), seamless works "Le Toquet Beach Race" top-end pipe, exhaust starting port plugged, KTM125 reed assembly. Best run: 110 mph. The best combination: no fairing, stock carb, stock reeds, radiator shrouds off.

There was a KTM 500MX in the box van, but it was a well-used desert racing/testing unit—but then, why not? It was wearing the 540's rear wheel and big countershaft sprocket in less time than it took to chew a mouthful of Ritz Bits. Surprise! The stock 500 with tall gearing was good for 109. The works pipe pulled out another 3 mph—123 was still a long way away, and we were thankful.

If KTM wanted to build a bike that would go faster than the old 495, they could do it tomorrow. Fortunately, they realized what a mutant the 495 was back in 1981 and they have been developing Open bikes with power that you can use. The 540 is still a king of brute force but, instead of a useless high rpm burst you get a long, heavy surge of roll-on thrust. This year's 540 revs higher than last year's, so the fun lasts even longer. KTM's 500 is a bit less friendly, but its low to mid rpm strength is so much smoother than those first 500s it's hard to believe the 495 and the 500 came from the same factory, a fact we're sure KTM is proud of. Today's fastest Open bikes are 11 mph slower on the dry lake, but they're ten times more fun everywhere else. □