



CYCLE WORLD TEST: YAMAHA YZ490



IF YOU'RE DIGGING FOR
MOTOCROSS HORSEPOWER,
YOU'VE JUST STRUCK THE

MOTHER LODE

If you had to sum up Open-class motocross bikes in just one word, it would be *power*—dirt-roosting, arm-stretching, wheel-spinning power. Everyone knows that 125s sometimes turn faster lap times and 250s are easier to ride, but Open-class riders could care less; they've got that *power*.

Over the past few years, Yamaha's big-bore MX bikes have given those power-hungry Open-class riders just what they've wanted. The YZ490—and before that, the YZ465—might have been hurting in one area or another, but horsepower hasn't been one of them.

And the 1984 YZ490 is no exception; in fact, not only might it be the fastest Open-class machine of the year, it could be the fastest motocross bike ever built.

Yamaha didn't have to build an all-new motorcycle to accomplish that kind of engine performance. But there are enough significant differences between this year's 490 and last year's to qualify the latest version as truly new. Many of those changes are in the engine, where there are new porting dimensions and a center-exit exhaust port. That exhaust port also is 2mm narrower and the intake port is a whopping 10mm narrower, >

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while the main transfer ports are 4mm wider. Making the exhaust and intake ports narrower sounds wrong, like it should restrict flow, but according to Yamaha, it actually increased the engine's output. A new reed cage with eight petals rather than six helps performance, as well, and a huge, 40mm Mikuni carb feeds the whole works. The finning on the cylinder is, like on last year's 490, a little on the sparse side, but the new radial cylinder head is claimed to dissipate heat more efficiently than the old design.

It wasn't necessary for Yamaha to change the engine cases as a result of the aforementioned top-end refinements, nor were any of the ratios altered in the four-speed gearbox. The gears themselves are stronger, though, and so are the engine mounts, which have given trouble on previous YZ490s. The front mount has been doubled on each side, and two aluminum stays now hold the head steady instead of one. The bottom engine mounts are unchanged, and the hollow swing arm pivot bolt still serves as the rear engine mount. The exhaust system's dimensions are new, however, and the pipe has an odd-looking flat spot outboard of its top bend to help keep from fouling the rider's right knee. This flat spot also is double-walled so it's less likely to get dented in a fall. The aluminum silencer is durably mounted and easily repackable.

This latest 490 has a different frame, mostly in that it uses a wishbone-style front downtube made necessary by the center-exit exhaust. The steering head

angle is the same as on the '84-model YZ250—28.5°—and so is most of the rest of the frame except for a slightly beefier construction in the area where the cylinder-head stays connect. This year's aluminum swing arm works with a redesigned Monocross single shock to give slightly different rear-wheel progression. The internal damping rates are new, obviously, and the rear spring has a softer rate. The compression damping is adjustable anywhere within a 20-click range, and the rebound-damping adjuster offers an 18-position range. Both adjusters are easy to reach, and they have positive-click detents that assure proper positioning.

We liked the way the YZ's rear-end worked best with the compression set at 15 clicks and the rebound at 6 clicks. Both adjustments, by the way, are measured in the number of clicks counted as the adjuster is backed-out counterclockwise from the fully-seated position. The best setting for the shock's spring preload depends upon how you ride and how big you are. The spring is the proper rate for a light rider or one who doesn't ride really rough tracks at high speed; but the spring is too soft for a pro-level motocrosser or an intermediate who weighs more than about 150 pounds. Cranking up the preload helps a bit for these kinds of riders, but the best solution is to install the heavier spring that's optional from Yamaha.

A similar situation exists in the front

suspension, where the 43mm Kayaba fork goes through its 1.18 inches of travel too easily for most riders. The stock fork springs are too light, and the original 10-weight fork oil is too thin. Even slower riders can benefit from using the optional heavier springs, and by using a slightly higher level (about 6 inches) of heavier fork oil (either 15- or 20-weight, depending upon track conditions, rider weight and rider ability). The stanchions of the '84 fork are shorter than the '83's, and the triple clamps have less offset. The shorter tubes help load the front wheel in the corners to make steering more precise, and the reduced offset lengthens the trail for better straight-line stability. The Kayabas also have an adjustable compression-damping blow-off valve in each fork leg that comes into play any time the front wheel bashes into a big or abrupt bump. The blow-off point can be adjusted by turning a screw in the bottom end of each fork leg to any point within an eight-turn range.

Down at wheel level, the YZ490 has hubs that are new in that they will accept Yamaha's patented new "Z"-type spokes. This design uses just 16 spokes rather than the usual 36, and each of those 16 is connected (using conventional threaded nipples) to the rim in two places, with a Z-shaped bend (hence the name) in the middle where it hooks through the hub. The brake drums in the middle of the new hubs remain the same as in '83. The front hub is 5.1 inches in diameter and is fitted with a double-



leading-shoe brake, and the 5.9-inch rear uses a single-leading-shoe type.

All of the little things that help make a motocrosser nice to ride and easy to live with are well thought-out on the 490. The plastic gas tank is lower and further forward than before, and it's narrower in the middle, as well. That alone allows the new 490 to have a smaller feel, plus making it easier for the rider to move around when riding over rough ground. What's more, the control cables have large housings and work smoothly, the hand levers are shaped nicely and are easy to reach, and the aluminum brake pedal has its straight-pull cable tucked behind the frame where it's less apt to be snagged by the rider's boot. There's a good plastic chain-buffer pad around the front of the swing arm, and the chain guide is mounted close to the rear sprocket, where it stands the best chance of keeping the chain from derailing. The front brake cable is routed through a sturdy plastic guide and is clamped firmly to the fork slider so it doesn't get poked into the front wheel.

That's all well and good, but the 490 has one hitch that must be dealt with before you can enjoy all of its fifty little features and marvel at its impressive power: You first have to start the engine. And on the YZ490, that's sometimes easier said than done, especially when it's cold. The kick starter is long enough and it clears the footpeg and all, but the motor is still a bear to kick through. And it has to be kicked *all* the way through,

with enthusiasm, many times before anything happens. Our bike generally required 15 to 20 kicks until we figured out an easier way: Pull the choke on and kick the engine through three or four times with the throttle absolutely closed. Then take the choke off, hold the throttle part-way open and kick once, *real* hard. If we did all that, the 490 would usually start up and blubber for a few seconds, then clear out and be just fine. When warm, the engine usually started on the first or second kick.

You also can forget about enjoying all of the 490's power so long as it's equipped with the stock carburetor jetting. The engine will stutter, blubber and, eventually, foul spark plugs. After much experimentation and quite a few plug-changes, we came up with jetting that worked nicely for us. That jetting is as follows:

Standard Jetting	Modified Jetting
2.5 slide	3.0 slide
Q-8 needle jet	Q-4 needle jet
50 pilot jet	30 pilot jet
#2 needle-clip position	#2 needle-clip position
440 main jet	440 main jet

Be sure you check the float level, too. Most of the 490s roll out of the crate with the float set too high. The excellent owner's manual details the float-setting operation nicely.

Once the engine is running, the rider notices that it vibrates considerably—

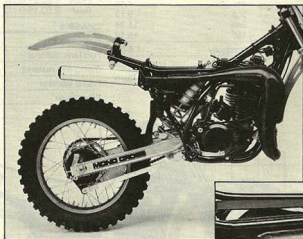
more, perhaps, than any motocross bike we've tested in quite some time. The footpegs, handgrips and seat continually transmit the buzzing to the rider, making long motos, or just long rides in general, much more tiring than they ought to be. But at least the engine is making megadoses of horsepower while all that vibrating is going on. It takes a brave, talented—and sometimes, a loony—rider to twist the 490's throttle wide open and leave it there for very long on a motocross track. Anyone who doesn't get the holeshot on this bike has no one to blame but himself, because the power is there to beat anything, except other new YZ490s, into the first turn.

There's no power shortage elsewhere on the track, either, despite the Yamaha having "only" a four-speed gearbox. Most of the time, you won't even use all four gears, for the powerband is wide enough that you can circulate most tracks at competitive speeds using just two or three gears. The only caution is to just *roll* the throttle open rather than simply yanking it WFO quickly, otherwise the rear tire will spin violently and the bike will get extremely sideways if the traction is less than perfect.

When you do have to shift, you'll find that the 490 does so smoothly and easily. Shifting is positive, too, even when rushed during those frantic MX starts. Second gear can propel the YZ out of the starting gate quickly and with a minimum of clutch slippage—which is a good >



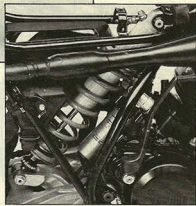
Yamaha calls them "Z" spokes, but you can think of them as two, two, two spokes in one.



Aluminum parts abound. The swing arm, the brake pedal, the brake-stay rod and the repackable silencer are but a few.

The excellent KYB fork offers 11.8 inches of travel and an adjustable compression-damping blow-off valve. The double-leading-shoe front brake works almost as well as a disc.

Aluminum-bodied, Yamaha-built shock has 20 compression-damping settings and 18 rebound positions. The compression adjuster is the knob atop the reservoir; the rebound adjuster is the ring at the bottom of the shock body.



thing, since the clutch tends to overheat and gain excess freeplay if it's slipped for long. Thank fully, the clutch cools quickly and returns to normal after only a half-lap or so of riding.

A bike as fast as the YZ490 also needs excellent brakes, and those the Yamaha has. The front brake is exceptional, and is almost as good as a disc brake—for short motos, at least. In a 40-minute moto ridden at pro-level speeds, it's possible to overheat the front brake enough to cause noticeable fade. And despite the fact that the rear brake is of the full-floating design, a too-heavy foot can have the rear wheel chattering into corners, especially downhills.

In those turns, the YZ isn't as quick-steering as, say, a CR500R Honda, but it isn't slow-steering, either. The bike

tracks well through turns, even whooped ones, and it stays arrow-straight in the fast sections. But there is never any doubt that this is a big, Open-class motocrosser, since it always feels like one, regardless of the circumstances. The 490 is lighter than ever and noticeably improved in the handling department, but it still won't ever be thought of as "a 250 with an Open-class engine" the way some of its competitors are, the Honda CR500R in particular. But the Yamaha is more stable than the Honda in a straight line, refusing even to shake its head the way the CR often does. Some riders, in fact, prefer that characteristic in a motocross bike, feeling that it's better to have slightly slower handling and a lack of a head-nod than it is to have a quick-handling machine that tank-slaps

into the turns.

If you're one of those riders, the YZ490 just might be the machine for you. But be aware that it's a bike that will need some modifications and fine-tuning before it will perform at its best, both in the carburetion and in the suspension. And even then, the Yamaha might be out-handled by some of the others in the class. There's no doubt that the 490 has the most awesome engine available, and Yamaha's Competition Support has the specs that can unlock about six more horses—if you think you'll really need them. But if you're interested in winning the race into the first turn every time, you might; and if you're just one of those horsepower-junkies who populate the Open-class, the YZ490 is probably the bike you've been looking for. ☑

SPECIFICATIONS

GENERAL

List Price	\$2599
Importer	Yamaha Motor Corp. USA 6555 Katella Ave. Cypress, CA 90630
Customer service phone	(714) 761-7438
Warranty	30 days, unlimited mileage

ENGINE/GEARBOX

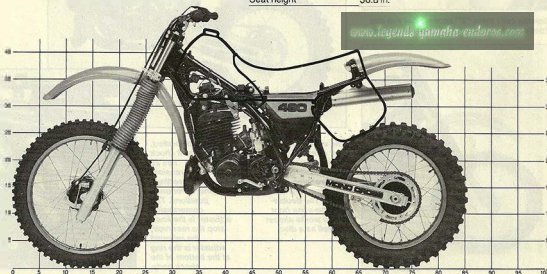
Engine type	two stroke Single
Bore x stroke	87 x 82mm
Displacement	487 cc
Compression ratio	6.9:1
Claimed power	56 bhp @ 7000 rpm
Claimed torque	43.7 lb.-ft. @ 7000 rpm
Carburetion	40mm Mikuni
Ignition	CDI
Lubrication	premix
Primary drive	straight-cut gear
Gear ratios, overall:1	
4th	7.19
3rd	9.19
2nd	11.36
1st	15.10
Oil capacity	1.6 pt.
Starter	primary kick
Air filter	oiled foam

SUSPENSION/BRAKES/TIRES

Front	KYB telescopic
Wheel travel	11.8 in.
Tube diameter	43mm
Rear	Yamaha single shock
Wheel travel	12.6 in.
Brakes:	
Front	5.1in. double-leading shoe
Rear	5.9 in. drum
Tires:	
Front	100/9 021 Bridgestone M37
Rear	140/80-18 Bridgestone M36
Wheel:	
Front	1.60-21 D.I.D. aluminum
Rear	2.50-18 D.I.D. aluminum
CHASSIS	
Fuel capacity	2.7 gal.
Fuel tank material	plastic
Swing arm material	aluminum
Frame material	steel
Wheelbase	59.0 in.
Seat height	36.8 in.

Handlebar width	32.0 in.
Footpeg height	16.8 in.
Footpeg to seat top	20.2 in.
Footpeg to shift lever center	8.0 in.
Footpeg to brake lever center	5.4 in.
Swing arm length	2.27 in.
Swing arm pivot to drive sprocket center	2.9 in.
Gas tank filler hole	1.7 in.
Ground clearance	13.6 in.
Rake/trail	28.5°/4.72 in.
Test weight w/half-tank fuel	238 lb.
Weight distribution, front/rear, percent	48.35/1.7

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