



# YAMAHA MX 400

Plenty of grunt, and with a little help, lots of suspension.

Lately we've been up to our ears in letters from readers wanting to know why we haven't tested a monoshock motorcycle yet. A lot of them say "Hey, I heard about the new YZ 250s and 360s, and I haven't seen you guys out there bashing one around a course yet. What gives?"

The main reason we haven't tested a YZ monoshocker is that there aren't that many around. Yamaha is only intending to produce a very limited amount of units for the first year YZ machines, thus we didn't want to set you back in your chair with a gleam in your eye, wanting a bike that you might be hard pressed to find.

But, fortunately, the regular motocross machines are here, and our first test of a monoshock system (Yamaha prefers to call it the "Monocross") is here. Before we get into the big to-do about the bike, there is a little history that you might be interested in.

Back in the September '74 issue of *Popular Cycling* we had the opportunity to interview the Yamaha MX team which then consisted of Pierre Karsmakers (now with Honda); Mike Hartwig (now back with Husky); and Tim Hart (still with Yamaha). After the interview was finished, we talked the guys into letting us ride their bikes and taking a few laps on the "works" bikes they had out there. One bike, the YZ 360, impressed us with arm-stretching speed, but zero low end. It went fast all right. When you got off, it gave you the impression that you could ride it for about an hour and then scratch your ankle without bending down. Now that we've got our test bike, we found out where all that low end went. They saved it for the MX 400.

A lot of that low end engine characteristic is the result of the combined efforts of the R&D Department in Japan and Europe. Remember when Ake Jonsson first switched from Maico to Yamaha? He immediately set out to build a big-bore Japanese machine that would have the required engine habits that are needed for smooth, fast riding.

He came upon his first wall when it came to stroke.

You see, the Japanese have always been believers in the short-stroke theory. Give the public a machine that explodes like a blender in a 220-watt plug socket, and you'll sell a million of them. And they do. The only problem is that when the purchaser pops off the top and starts looking around for some more bottom end, it's hidden so far away that he'll never find it.

Ake Jonsson was on the right track when he increased the stroke of the Yamaha engine in the big-bore machine. The 400 that we tested has more low end grunt than you would expect from Japan.

As a matter of fact, the engine is almost all low end power. If you start out in first gear and wind the revs up to the top, there is a definite planing out of power. You don't have to keep this machine up on the pipe. It runs better when the power seems to be off at the bottom. You've got all the torque that you could ask for. Go for high rpms and you'll be disappointed. Shift up a gear, bog the engine, and you're moving a lot faster than you realize.

The tranny is a five-speed, and has the proper steps for motocross racing. It gives you a lot of options for starting the bike off the line. We found that pulling second from a dead start was not only exhilarating, but a good way to hit the first turn all alone. You'll have trouble with the 400 Maicos and 360 Buls, but the rest of the bikes seem to be behind most of the time. The Buls and Maicos run about even with the MX 400 in acceleration. We even drag-raced the MX against a 360 YZ, and although the YZ is supposed to be faster, lighter and handle better (and more expensive), the 400 would pull it to the first corner—credit going to the low end grunt again. The 360 was faster, the 400 was quicker. Big difference.

We missed a few shifts on the bike when it was new, traditional on any

Yamaha. After about six hours of rowing the gearbox and a change of gearbox oil (we fed it Bel-Ray), our Sachs problems went away. Most shifting problems occurred from the transition of second to third and back down again.

If you're really bored and are looking for a few giggles, pop off the gas tank and seat, then take a good look at the exhaust pipe. Sit on your milk crate and envision this: Man at drafting table. Man has hay fever. Colossal hay field next door to drafting room. Man is designing exhaust pipe for Yamaha MX 400. Man had pencil on paper, working out the travel pattern for the pipe. Man gets big cloud of pollen in nasal passages and sneezes violently. Pencil goes wildly over paper. It's Friday and he leaves early, not bothering to erase the mistake. Production Department manager comes in and takes paper off drafting table. We get a ridiculous looking pipe that has more bends than the Mississippi river during the rainy season.

The first time you look at the pipe you'd think that someone had run over it with a truck and then slipped it back in the bike before anyone noticed. Seriously, the pipe does work well, and doesn't burn your legs. The only way we found that you could toast your leathers was if you sat on the gas tank all the time, and had a strange attachment to the cap. Then you could burn your riding gear. Otherwise, it was out of the way and never bothered us, except for the harsh bark which was emitted, and which was much too loud on a Sunday morning. A silencer it isn't.

You're probably wondering how the monoshock—oh, excuse us—Monocross suspension worked. Well, at first it didn't. It took about two hours of riding just to get it to acknowledge that there were bumps on the track. But then it broke in and started to work. You've got to have a little patience with it.

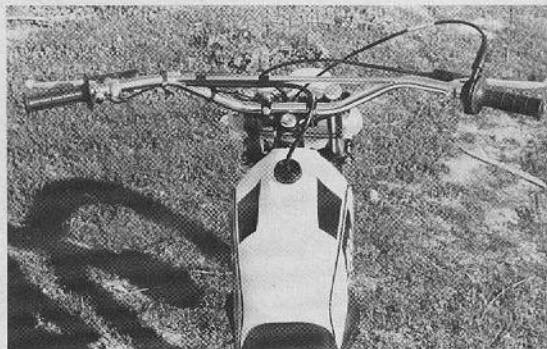
Accelerating over bumps, the monoshock system worked just as well, if not better, than another bike with moved-up





Turned-down fork tubes, DID rims and a good front brake lead the 400 through the turns.

Bars were too wide when we got the machine, but they are designed to be cut down with a hacksaw.

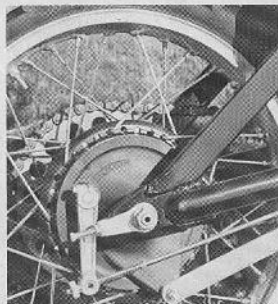


suspension. Get off the gas and let the machine coast over large bumps, and things begin to get very busy in the rear end. Our 185-lb. test rider was complaining that it was still too stiff. After everyone played their violin and called him the usual names, he gave it to a rider who almost topped the 300 mark. He came back complaining that it was too stiff. We put more hours on the bike, and with time the rear end got softer. But not enough. It took a trip to Orange County Cycle where they performed a little trickery for us. Now it works just peachy keen.

The front bouncers were filled with the usual fish oil that you find in all Japanese bikes these days. We drained that immediately and put in some real fork oil. Then we slipped a Terry Industries fork kit up the tubes. Now the front complements the rear. It seems as though they are having a contest to see which end is working better. It's hard for us to pick a winner. (Articles on both front and rear suspension appear in this issue.)

Speaking of the front end, you'll find that it's extremely light when riding. It takes almost no effort to loft the wheel down your favorite straightaway. Part of the reason behind this is the weight distribution. The bike has 104 lbs. sitting on the front end. The rear takes the remaining 139 lbs. We found that leaning over the bars some under hard acceleration helped keep it on the ground. If you assumed the street-riding position (back of the seat, sitting straight up and down), you would be greeted by the crossbar waving in the air. It's a neat asset for getting over the rough sections of track, as long as you keep your eye on it. You don't have to replace the front rubber as often either.

The seat was a bit on the stiff side when the bike was new, but it eventually broke up the foam padding to give you



The rear brake worked well for a change. Backing plate is magnesium, steady arm is aluminum.

that "custom" position that you get by pressing your cheeks in it for awhile. It may be comfortable for you, but don't be surprised if your buddy comes back complaining after you let him give it a try. It's definitely a one-person seat.

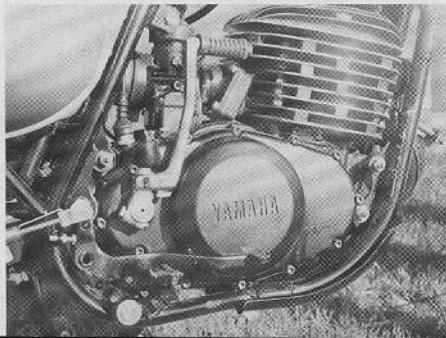
You can get 2.0 gallons into the white gas tank on the bike. That will get you through a 45-minute moto with just a taste left over. The MX 400 is a very

thirsty animal. The tank conforms to the seat towards the rider and gently bows outward from there. Sitting on the bike you'll first feel that the tank might be a bit too wide and restrict your legs. It isn't and it doesn't. The feeling goes away after the first time you destroy a berm or dig a trench down the straightaway.

Brakes on both ends are still good Yamaha-stoppers. This year the rear brake actually worked on our test bike, without locking every time you thought about applying pressure to it. The front will still pull your bad dentures loose if you're really getting on the binders hard. It's still about the best on the market.

The footpeg might seem too small to the average rider—you can barely fit your boot on with comfort. The bars are way too wide, but are designed to be cut down to the rider's preference. If you're one of those guys with a seven-foot span from fingertip to fingertip, you'll want to leave the bars alone. For us with normal proportions, a hacksaw will come in handy.

Air filtration was different from normal design. It has two foam filters, one underneath each of the side panels. A long connecting plastic rod holds the unit together. The filters are hard to get



The brake pedal is longer than in the past, and the kickstarter works a compression release for easier starting.



back in if you don't know the trick. The hot setup is to screw one filter to the connecting rod, then set the other filter in the cover on the opposite side before tightening the unit down.

Foot shifter and brake pedal have both been slightly extended so that people with a boot size over 4½ can get them working without stepping all over them. About a nine to a 9½ boot is just right to reach the shift lever. The brake is a little closer in.

The carburetor works nice, although it's next to impossible to pull up the choke lever with gloves on. It's one of those pull-the-rod and turn-it-sideways numbers, and will send you to the rubber room if you're not patient. You can get a hold of the regular old push lever from your Yamaha dealer. We suggest that you give it a try.

Starting the bike was easy, because there is a small actuating cam on the kickstarter that connects to a compression release on the cylinder. You don't have to fight the 7.5-to-1 compression ratio when you start the bike. It will fire easily and predictably, by the way.

We found the MX 400 to be one of those machines that doesn't like to lay down in the corners. You know all those photos you see of Pierre gassing it around. If you'll look close you'll notice that he doesn't get the Yamaha over like the Maicos or Buls. It rides a little like a Husky. Hit a berm, dial it on and leave the corner upright. It would rather stay nearly vertical than drag a handlebar through a turn. If you're going out for



Hiding in the shadows behind the 32mm Mikuni is the choke lever that will give you a few frustrating moments.

course. The 400, combined with all those ponies and that rear tire, likes to radically rearrange the dirt patterns on a course. If you happen to find a line that you like on one lap, don't worry about finding it the next time around. That two-inch deep trench has your name on it. You could eventually MX your way to China on this one.

We drilled a few more holes in the air box, next to the five that Yamaha installed. The box was starving the engine of air, and with our handy drill and a little eyeballing, it started to breathe much easier. If you plan to go through a lot of water you might consider repositioning the electrical box on the Yamaha. It sits right by the monocross suspension system, right where the rear wheel throws up water if your rubber cover fades away from smog rot.

Overall, we enjoyed the Yamaha. It's got more low-end grunt than anyone

could wish for, and it's tractable and very applicable. The stock Yamaha handling isn't anything to write home about, but the monoshock setup helps it along somewhat. It works better than many other Japanese offerings when it comes to throwing the bike around. The suspension can be quite nice, once altered.

We're going to break with the norm on the test of the Yamaha MX 400. We usually get a test bike for only about two months, but somehow we conned Yamaha into letting us keep this one for about eight months. During this time it will be raced in such mentionables as 20-minute motos, desert runs, hard and hound, and possibly an enduro or two. We're going to keep tabs on the stuff that falls off (if anything), how everything holds up, and how we feel about the bike after "living" with it for awhile. There will be a follow-up article at the end of our final testing. In the meantime, the Yamaha MX 400 has a lot going for it—enough that we feel it's a great improvement over what Japan has offered us before in the big-bore department; enough of an improvement to make you look twice.



## YAMAHA MX 400

Suggested Retail Price: \$1485

### ENGINE

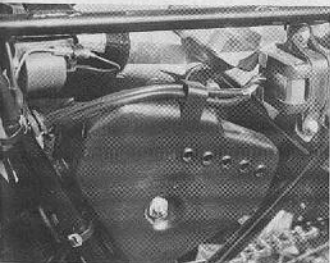
Engine type	2-S, sgl. reed-valve
Bore and stroke, mm	85 x 70
Displacement, cc	397
Horsepower/rpm (claimed)	n.a.
Torque/rpm (claimed)	n.a.
Compression ratio	7.57:1
Air filtration	foam
Carburetor	VM-32mm Mikuni
Lubrication	oil in gas
Ignition	CDI

### DRIVE TRAIN

Transmission	5-speed
Clutch type	wet, multi-disc
Primary drive	gears
Final drive ratio	2.8:1

### CHASSIS

Chassis type	split down-cradle
Overall length, in.	82.5
Saot height, in.	32.1
Peg height, in.	9.6
Ground clearance, in.	9.3
Wheelbase, in.	55.7
Weight as tested, lbs.	243
FR/RW wt. bias, lbs.	104/139
Tires, front	3.00 x 21
rear	4.60 x 18



Yamaha puts five holes on each side of the air box. We drilled a few more and the bike seemed happier.

those big slides and impressive long peg draggers, forget it. The Yamaha doesn't want to play with you. It would rather get in and out of the corner quickly and without a lot of flashy antics.

If you're looking for a tire that will make the competition cringe while sitting on the line, take a gander at the monster holding up the rear of the 400. It's a 4.60x18, and it gets more traction than a Caterpillar bulldozer with new metal treads. You will also get complaints from riders who followed you around the

Max. Pts.	NUMERICAL EVALUATION	
10	Power	10
10	Powerband	9
10	Acceleration	10
10	Transmission	
	(5) Ratios	5
	(5) Operation	4
10	Suspension	
	(5) Front	4
	(5) Rear	4
10	Brakes	
	(5) Front	5
	(5) Rear	5
10	General Handling	9
30	Miscellaneous	
	(5) Starting	5
	(5) Rider comfort	4
	(5) Quality of craftsmanship	4
	(5) Riding maneuverability	5
	(5) Tires	4
	(5) Noise level	3
100 pts.	Overall Rating	90 pts.