

■Motocross will never be the same. Long-travel rear suspension is just a concept to most riders without a factory ride. Now, the same suspension that appears on the prototypes is available at any Yamaha dealer on the 1975 MX 400B and MX 250B motocrossers.

Big bore motocrossers and, in years gone by, scramblers, have been dual purpose motorcycles with the power and torque for the sit-down hillclimb Sunday trail rider. Most of that power was lost in wheelspin but that churning rear tire was part of the thrill of having a big mxer. It was exciting, too, to hear the thud when the monster hit the ground after a jump. But no more, at least not with the new Yamaha.

You can dig a six-inch rut with that rear knobby in the four lower gears if the ground is smooth enough but most of the throttle action results in a neck snapping kind of acceleration that is more like a Kawasaki Z-1 or other street superbike. There isn't much of that after-jump thud because the rear wheel seldom leaves the ground and when it does, the landing provides a slingshot acceleration away from the "flight" speed.

Stated another way, the open-class mxers used to be just a bit faster than a 250 because they lost more of their



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YAMAHA MX 400

The best motocrosser ever built



power in wheelspin; now, you can use all that extra power IF you can control it. Nobody but a professional motocrosser will have the skill to handle the velocity (as in bullet) that the MX 400B provides.

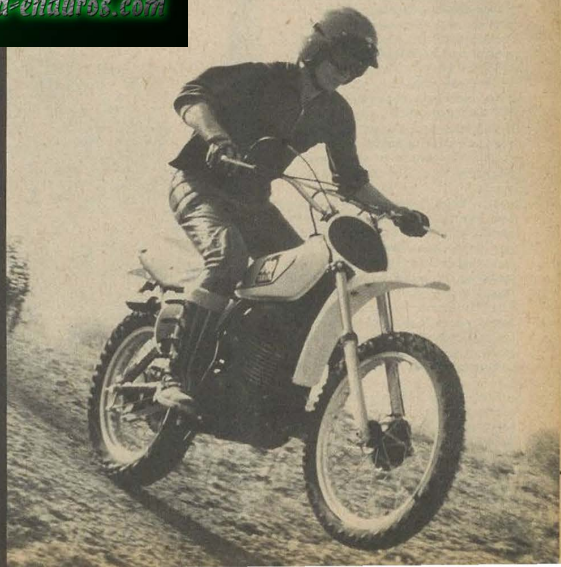
The front forks offer a quarter inch less than eight inches of travel and the Monoshock rear suspension provides six inches of wheel travel on the MX 400B. Every bit of that travel is usable and used with superb dampening at both ends that allows just the amount of movement that the speed and surface demand. We expected marvels from the cantilever rear end; the front suspension is every bit as good. The long front forks do flex noticeably to give a side-to-side wiggle that can't be controlled with the handlebars. The fork braces that the desert racers use should cure most of the problem.

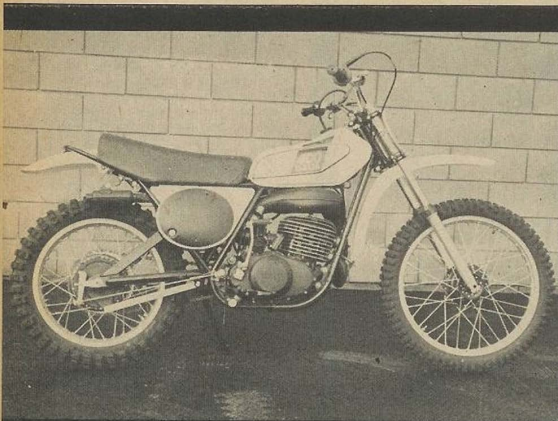
There is a penalty for all that suspension movement, however; the fork angle (rake and trail) can range from a chopper or desert racer shallow angle to an observed trials like steep when one end of the suspension system is compressed and the other fully extended. Some examples of those extremes: Sit well back and crank on the power to compress the rear end and extend the front and the MX 400B tracks straight as a railroad train. Hit the

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YAMAHA
MX
400B

...n, maybe best in the world





The seat is long enough and soft enough to make cornering a real joy but you'd better get your butt in just the right place if you spend much time in the seat or the suspension will spit you off.

there are no noticeable power peaks until about 8000 rpm. You can shift anywhere from around 6000 rpm to 8000 rpm and not lose a bit of acceleration. Maico or Husky may produce more dynamometer horsepower but the Yamaha gets more of it to the ground with less waste through wheelspin.

The Monoshock suspension system hunkers down in direct proportion to the amount of throttle opening to let rearward weight transfer give the rear tire whatever extra grip it needs to match the engine's power and rpm. You can provoke the wheelspin that is now old fashioned by leaning your weight forward (if you have the strength to hold it there against the acceleration force). Sit back on the seat, though, and there's so much traction you'd swear the track was just paved.

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bottom of a jump or the end of a series of whoop-dee-dos with the front end down (and the rear suspension extended) and the MX 400B is as wiggly and hard to control as the trials bike in a sand pile.

There is, of course, an infinite variety of stable-vs-sensitive response between those two extremes. Riding the MX 400B is like riding a dozen different motorcycles at the same time; great if you can ride well enough to match the machine's response to the course but just one disaster after another if you're a novice.

Yamaha's big bore engines have never been known for producing much power but the MX 400B is something different. The engine looks like the same powerplant that rests in the DT 400B this year, including the radial fin head and kick starter-activated compression release. The DT version produces typically mild power; the MX version is more like a Maico. Crack the twisgrip open and get ready; it's like popping the clutch at 6000 rpm on most 250s even from just above idle.

For the next 5000 rpm the engine zaps out an even flow of power that can only be compared to some superbike like a Z-1. The engine doesn't stumble and

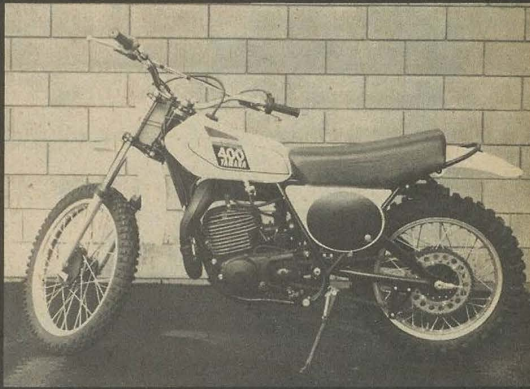
Body English takes on incredible importance with the Monocross' suspension system. Get your weight in just the right place and weight transfer will force the rear tire down enough to almost eliminate spin.



You can see that the rear is different but it is matched by nearly eight inches of fork travel. Those long legs need a fork brace to keep them from wiggling.

The MX 400B is a big motorcycle in every area except weight. The Mono-shock (now, Yamaha is calling it "Monocross"—wonder what it'll be if it appears on trials and road racing bikes?) suspension is heavier than most conventional shock absorber systems because the swing arm must be triangulated so the upper corner of the triangle can push and pull on the single shock absorber/spring unit beneath the fuel tank. That 'penalty' is slight enough; only about 10 to 15 pounds as compared to one of the obsolete motocrossers from 1974.

The machine feels far larger thanks to a high seat (to clear the tire's travel upward) and a tank perched up far enough to give the expansion chamber plenty of room to be routed over the top of the cylinder head. The handlebars are about as wide as they come and you



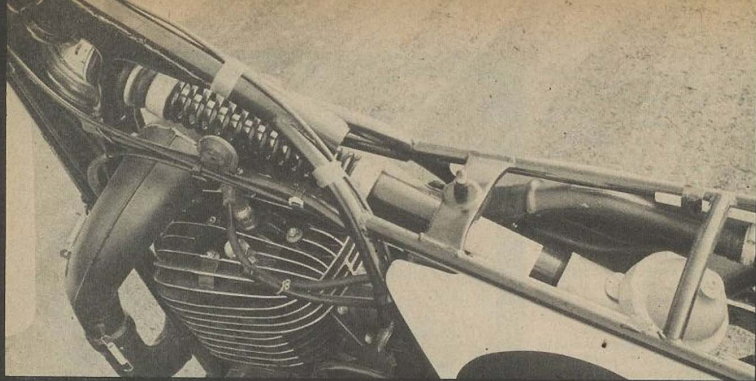
appreciate the leverage when the front wheel starts its wiggle. The extra leverage is needed, too, to lean the machine; it just doesn't want to go over to either side (going over the front and rear is something else....).

Yamaha's production "Monocross" motorcycle delivers more than any other motocrosser we've tested but it demands more of its rider too. You can more-or-less ride around on a Maico to let the machine do most of the work. Try that on the Yamaha and you'll go on your head in a hurry. With practiced body English and throttle control the MX 400B rider should beat any production motocrosser.

Broadsliding is a tricky proposition with all those changes in front end geometry as the long travel forks and shocks do their job. Bouncing off a berm or leaning through one road race style is the best way around a turn on the MX 400B. You can really throw this one at a berm wall in one of those rear-wheel-first, square-it-off, patterns the Europeans favor.

The really difficult thing to learn when riding the new Yamaha is that your body must be in just the right place, front-to-rear, to "load" or "unload" that rear suspension. You can, for example, pull out a bike length or more from the rest of the pack if you position your weight right after a jump. Get your fanny back about two-thirds of the way on the seat and you can actually

Any jump's length is cut in half because the rear wheel leaves the crest late and arrives back on the ground early—it makes backward endos too easy until you learn.

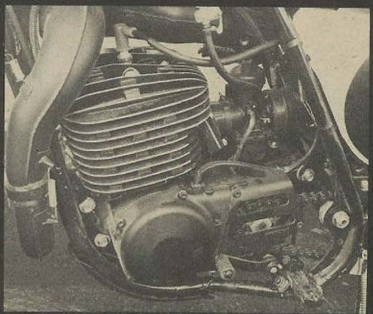
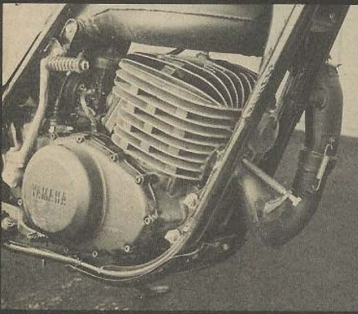


There it is: the single shock and cantilever swing arm-actuation that Yamaha now calls "Monocross." Nitrogen gas keeps pressure on the oil via a membrane to eliminate fade.

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The rectangular top tube on the swing arm is apparently enough to give it the stiffness it needs—the rear end was perfectly predictable.

Everything on the machine is trick but that steel gas tank (it should be plastic); plastic fenders, alloy rims, magnesium hubs and engine covers, reed valve induction and CDI Ignition.



YAMAHA MX 400B

Price	N.A.
Warranty	N.A.
Distributor	Yamaha International, Buena Park, CA.

ENGINE

Type	Two-stroke, single, reed valve induction
Displacement	397cc
Bore & Stroke	85mm X 70mm
BHP rpm	NA
Compression ratio	7.57:1
Carburetion	38mm Mikuni, slide-type
Overall gear ratios	
First	21.43:1
Second	16.04:1
Third	12.00:1
Fourth	9.52:1
Fifth	7.55:1
Sixth	NA

RUNNING GEAR

Frame	double loop with cantilevered swing arm acting against single shock absorber beneath fuel tank
Suspension	
front	telescopic forks
rear	cantilever swing arm & Monoshock
Tires	
Front	300-21
rear	460-18
Brakes	
front	internal expanding shoe
rear	internal expanding shoe
Electrics	capacitive discharge ignition

GROSS MEASUREMENTS

Weight	236 pounds
Front Wheel	104 pounds
Rear Wheel	132 pounds
Wheelbase	56 inches
Seat Height	32½ inches
Ground Clearance	9 inches
Handlebar Width	35½ inches

COMFORT RATING

Vibration	5
Suspension	10
Noise Level	5
Seat	9
Handlebars	9
Start Mechanism	6
Controls	8
Stand	7
Shift Mechanism	8
Switches and Instr	8
Overall Rating	72

PERFORMANCE

¼-mile	NA
0 to 60	NA
Braking distance from 60 mph	NA

SUMMARY

Power: as much as any machine made for the dirt with a suspension that gets that power to the ground for instant conversion into acceleration. This one could cut 10 per cent or more from your lap times if you restrain your reflexes to respond quickly enough. A for-real racer that's not happy at slow speeds and, therefore, not a playbike. The best rear suspension and forks yet.



The MX 400B is tall enough to make leaned-over broadsides difficult but, boy, does it love berms. The suspension shoves the knobs into the berm's bank with a vengeance.

accelerate away from the landing side of a jump because your rear wheel will touch down sooner than theirs.

You can almost eliminate rear wheel-spin if you move your weight (body English is the phrase) to help the weight transfer ability that rear suspension has to push the rear knobby down into the track. If you place your body in the wrong place on the pegs or in the seat you can almost expect a front or rear endo. Move too far forward and that rear suspension will snap you right over the bars; move too far back and the resulting pavement-like traction will let the machine loop over backwards.

We were surprised to find that the MX 400B's fuel tank was steel; it's about the only mass production aspect of the entire machine. The hubs, engine cases and other small parts are magnesium—they say so. The fenders are both plastic with a nice plastic still air box and side number plates—no brittle fiberglass. The rear tire is a fat 460-18. Ignition is CDI.

We hope that Yamaha worked all the bugs out of their single shock absorber suspension beneath long-suffering Ake

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KTM 400

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fiberglass. Spoke wheels are Akront's newest high tensile strength aluminum "gutterless" rims. The old style aluminum rims were equally strong and light but because of the troughs on either side of the spoke base, dirt would accumulate during use and add a surprising amount of weight to the wheels. The new design eliminates this.

Suspension is first rate. Up front are the newest Ceriani units. They're light, strong and they dampen in a manner that a sensitive rider can control and use to his advantage. Travel is a full 7 inches. Supercritical connoisseurs do a little trick to stiffen up the front end slightly. This consists of removing the stock fork oil in favor of a low viscous silicon replacement and adding a one inch spacer at the top of the fork sleeve. Few riders will need to do this. Fewer will desire to.

Marzocchi gas shocks are fitted to the rear. The positive features of these new DeCarbon-based units have been lauded throughout the industry. However, they do take some testing and experimentation for riders not familiar with all that they have to offer. Their vertical mounting position can be adjusted to six different locations, the last frame mount being so far forward that the shock is mounted almost horizontally. Spring stiffness is five-way adjustable. A rider has many combinations to choose from when formulating his rear shock setting. The Marzochis allow each individual rider to decide his preference. And they deliver.

Tires are Metzler knobblies. A 3.50 x 21 up front is complemented with a 4.50 x 18 at the rear. Metzlers are noted for their traction, predictable handling and durability. And not unlike the rest of the KTM 400, an owner pays for the luxury. Again, it's a matter of extravagance, commitment to proven quality—or both.

Instrumentation consists of an accurate V.D.O. speedometer with trip-set. Levers and handgrips are from Magura. The Magura grips are rather spartan. They offer little help in dampening stress at the wrists and hands. Most hard riders would probably prefer something softer.

The overall coordination of handlebars, levers, footpegs, rear brake lever and shift lever is traditional and comfortable.

The consensus of riders from 5 feet 8 inches to 6 feet 5 inches is that the KTM ISDT 400 is an especially comfortable machine. While complimentary, this is a quality that should certainly be expected

of an ISDT enduro model. Any endurance machine with less than comfortable seating or handlebar configuration must certainly be a failure if it accelerates the fatigue of its rider.

A lengthy 57-inch wheelbase makes the KTM 400 particularly stable under power. You point it where you choose and it goes. Power is instantaneous, brakes are responsive and little affected by mud and water. Set up properly, the Marzocchi/Ceriani suspension combination allows the bike to hopscotch with controlled rhythm over whoop-de-dooos and "cadillac" through sand and soft washes. Speed is a foregone conclusion—power is always there. The six speed gearbox makes riding at 7 mph as effective as 70 mph.

It's an expensive new motorcycle that demands ego from its owner—expertise from its rider. The KTM is a seasoned enduro for the seasoned enthusiast. *

Yamaha MX 400B Test

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Johnson's legs. The triangular swing arm's top corner pushes and pulls on the spring-loaded shock absorber beneath the tank. The dome houses compressed nitrogen gas that is separated from the shock absorber's hydraulic fluid by a rubber-like membrane. The gas pressure keeps the shock oil from frothing to extend the fade-free life of the unit to hours (it recovers as soon as the fluid cools). Under normal (?) racing conditions the nitrogen should last at least a season—you'll know it needs a boost if the shock absorber begins to fail to dampen at the end of a moto.

There are three different coil springs to match the suspension to the rider's weight and/or the roughness of the track. Three easy-to-reach bolts retain the seat and tank to allow access to the shock absorber. There's no oil-injection pump to remove; it's a serious racer that demands a 20:1 mixture of oil in the fuel. The engine has a sausage-size "muffler" and rubber dampeners between the cylinder fins but it sounds like a shot gun gone berserk—far too noisy.

A valve in the front of the cylinder harrel is opened by a cam and cable every time the kickstarter lever is depressed to make starting as easy as with a 125—except that it took an average of 10 kicks to get it going (even with the carburetor-mounted choke on) when cold; one or two kicks would pull its trigger when it was warm.

The Yamaha MX 400B is a breakthrough in off-road motorcycle technology. Hand-made prototypes can match its handling and power but the breakthrough lies in the fact that Yamaha was the first to get it all together on a production line.

Everything else is going to end up where the old BSA Gold Stars reside to be replaced with Monocrossers and, in time, with its competitors from Europe and Japan. Swing arm suspensions were really designed for road racers in the thirties; it has taken two decades for the swing arm to be redeveloped for the dirt and you were there. ●

YAMAHA TY 175B

(Continued from page 137)

two-ply (softer) tires more than any other modification. The softer tire would cure much of the wheelspin tendency, especially with the 175's super-light weight.

The TY 175B steering is almost too responsive with its short wheelbase. That quick steering makes for a bit of terror on the trail in spite of an inherent straight-line stability in sand. It isn't really a trailbike unless you consider a mountain goat's path over rocks to be a trail. The TY 175B is, in our opinion, an excellent machine for a new rider who really wants to enjoy observed trails competition while he rides. The machine inspires a sense of confidence in a novice who might be intimidated by the instant response and weight of a 250 or 325. We can't imagine a TY 175B winning the Master class, but a novice just might make it with practice and a change of tires. ●

SUZUKI

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more of the rider and machine weight over the rear wheel than any motorcycle we've tested; two or three percent more than the other observed trials cycles. That rearward weight distribution contributes to the light steering effect.

Gordon Farley earned his reputation by wrestling the British Trials Championship from the legendary Sammy Miller in 1970 and 1971. The Suzuki RL 250 is every bit a credit to his ability. It is far less a copy of the Spanish machines than the other Japanese triallers and a rider used to a Sherpa T or Plonker or Cota will find it a bit strange at first. It takes a bit more forward weight distribution to keep the front wheel down on the Suzuki but that quick steering can be a real help in negotiating the contrived corners of many American trials sections.

Its inborn shortcoming is a lack of flywheel weight but that, too, is something that can be controlled with experience. A rider should be able to