

YAMAHA MX 250

■ Suspension has become the name of the game when it comes to motocross, and Yamaha was one of those who started the whole thing with their prototypes. Those Monoshock (Yamaha now calls it "Monocross") machines helped Hakan Andersson to earn Yamaha its first world championship title on a 250cc machine that was a direct ancestor of the MX250B Yamahas now in dealers' showrooms. Yes, me boy, you can buy one just like the world champion's. The only thing that doesn't come with it are the mechanics to maintain it and, incidentally, there are a few ponies missing *because* those same

mechanics won't be around to soothe them. Nobody, then, is really going to win a world championship on the MX250B, but it is one machine that we'd suggest to any novice or amateur who wants the best weapon *he* (or she) could buy with the hope of winning local events. An expert class rider would want more power and, perhaps, a better set of forks, but an average rider will win on this one providing, of course, he takes the trouble to tune the tricky rear suspension to suit the track and his riding style.

Yamaha certainly chose the hard way to find a suitable long-travel rear

A world championship weapon for suspension. A backyard welder can make a reasonable replica of the "other" factories' forward-mounted shock absorber solution to the search for more movement at the rear axle. It takes an entire new frame, however, to come close to what the Monocross suspension provides. We're sure that both Hakan Andersson and Ake Jonsson must have wondered if the engineers really knew what they were doing during the 1973 Grand Prix season, but they *did* get the thing to work and it is in production. Most of the motorcycle magazines complained as much as the factory riders did when the first YZ250 and 400 Mono-



MX250B TRACK TEST

...n or the masses—almost.

shockers arrived, thanks to some dumbness on the part of the factory. Those Monoshock units *must* be tuned to match the rider and the "test" bikes just weren't set up the way they should have been. We had an advantage, this time, in having one of Yamaha's technical men along with the necessary tools, gauges and a nitrogen bottle (and with the experience of a Yamaha test program behind him) to help tailor the MX250B to suit our various test riders.

There are several very sound reasons why Yamaha went to the trouble to stick with their single shock design. The beneath-the-tank location allowed a

shock absorber with enough length and bulk to provide the nearly seven inches of rear wheel travel that was deemed necessary for motocross. That single spring and shock absorber unit weighs no more than two conventional shock/spring units but it does more and, more important, it will do it for longer without fading because it has the bulk and the extra travel that other shock/spring units cannot have. The single shock avoids another, less obvious, problem: Conventional shock absorbers often work at different rates to allow the rear wheel to flex with the swing arm in a vertical plane, and that, in turn, upsets the

machine's stability. The single shock/spring unit is linked by that triangular swing arm, on the Yamahas, to both sides of the rear wheel to provide equal springing and dampening right and left.

A number of the newer gas-filled shock absorbers intended for long-travel, forward-mount, rear suspension operate much like the Yamaha Monocross unit. The Yamaha unit, however, has an adjustable gas pressure feature that allows *both* the dampening and the spring rate to be adjusted to a fine degree. It is also possible (and, for some rider or track conditions, necessary) to replace the springs with stiffer or softer

YAMAHA MX 250B

units and/or to change the viscosity of the hydraulic fluid from the standard 20W to 5W or to 10W. It's all very complex at first, but with experience it's no more of a burden than finding the right main jet or spark plug or sprocket set. Race-tuning became more complex with the advent of long-travel rear suspensions, and if you expect to win you might as well add that tuning knack to your knowledge bank. The encouraging aspect of the Yamaha "system" is that you don't have to wonder what brand of shock to use or whether to move it back or forth on the swing arm or frame; the basic system is there and it truly is the best way to obtain long-travel rear wheel movement.

The subject of tuning the suspension

is complex enough to fill an article

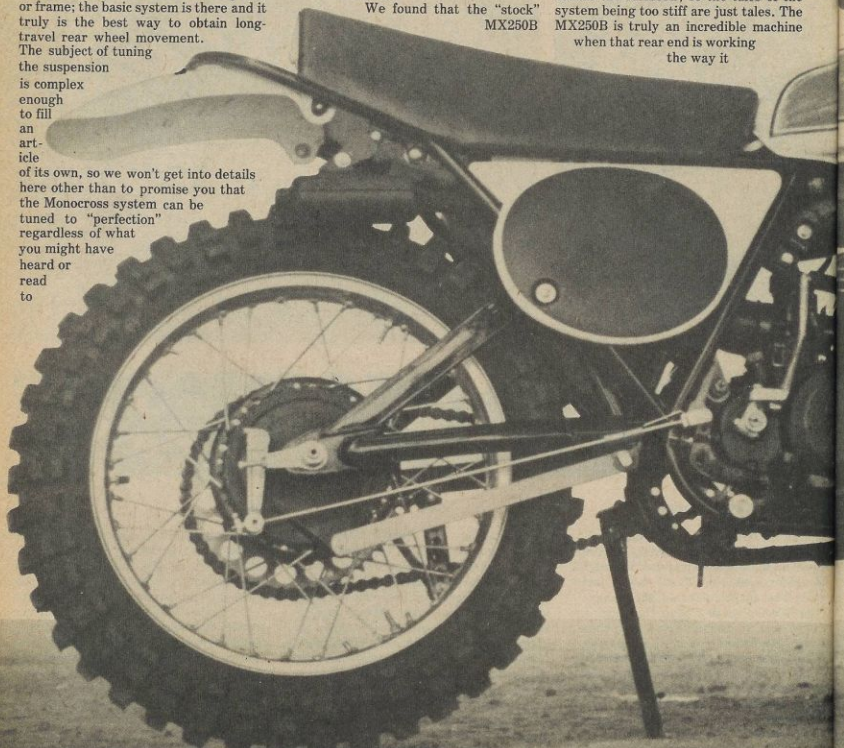
of its own, so we won't get into details here other than to promise you that the Monocross system can be tuned to "perfection" regardless of what you might have heard or read to

the contrary. Some Yamaha dealers have the necessary tools and experience: if you cannot find one, write directly to Yamaha International in Buena Park, California, and find out the location of the nearest dealer who is willing to service the Monocross unit. Yamaha *does* have a service bulletin that is the direct result of testing to find the best initial pressure, spring and fluid settings for different rider weights and track conditions. The pressure adjustments that we made on our test machine came right out of that bulletin and they do work.

We found that the "stock" MX250B

Monocross set-up with a 4 kg/mm spring, 285 psi of nitrogen pressure and 20W hydraulic fluid was, indeed, perfect for a 140-pound intermediate-class rider on the Indian Dunes Shadow Glen course. Surprisingly, a 220-pound novice found the set-up too stiff for his speeds on the same course, and a change to 240 psi of nitrogen was all that was needed to make that rider happy. There are lighter-rated springs and the nitrogen pressure can be reduced to 180 pounds to tune the unit to the lightest and slowest rider that could possibly handle the MX250B, so the tales of the system being too stiff are just tales. The MX250B is truly an incredible machine

when that rear end is working the way it



was intended to. You'll find traction, even over hole-filled corners and stutter bumps, that you never thought possible and it takes a whoop-dee-doo big enough to be a jump to even be noticeable. Jumps, by the way, are about half the length they used to be because it takes that long for the rear tire to finally leave the ground and it lands far sooner than

the rear tire on a conventional motocrosser.

The MX250B's front end, however, is not quite a match for the Monocross rear end and that's one of the reasons why it's not a factory racing replica. (The other reason is the mild engine.) The forks provide about 7½ inches of travel, just an inch more than the rear axle's total movement. That seven inches isn't quite enough and the problem is compounded by the fact that the forks themselves are too soft. The forks take a tremendous beating on any machine with long-travel rear suspension because much of the rear end's action gets transferred to the front, and with all that rear travel the rake and trail are constantly changing up front. The MX250B is no worse than most long-travel machines but that super rear end led us to hope that the front would be as good. Given a pair of eight-inch Betor forks (if you can find and/or afford them), the MX250B would have the best suspension in the "production"

front wiggles as the forks flex (and bounces and squirms as the forks bottom) to make control a bit precarious at high speeds. Those forks would probably work better than what you're used to but the MX250B is faster to cover the course a whole lot longer than anything else you've ridden because this one has traction everywhere!

The engine has the appearance of the YZ powerplants, right down to the magnesium side cases and radial fins. It's about as powerful as the 1973 YZ prototypes, we'd guess, and about on a par with a new Pursang. On a paved-smooth straight, Maicos, Huskies and Can-Ams would run off and hide. On a typically rough surface, though, the MX250B can hold its own with most; the Yamaha's tire will be digging while the others are bouncing. The solid-state ignition system and two (a right and a left) air cleaner elements help to provide a degree of reliability that's typically Yamaha in spite of the racing nature of the Monocrosser. There's not much power below about 5000 rpm in spite of the reed valve, but there's no noticeable peak in the mid-range that could upset a powerslide.

The MX250B's detail work is what you've come to expect from late-model Yama-crossers. The brakes are strong enough to stop a Jeep, the fenders are flexible plastic, the pegs are solid and self-cleaning, the tank is a too-heavy steel pressing, the rims are ribless alloy

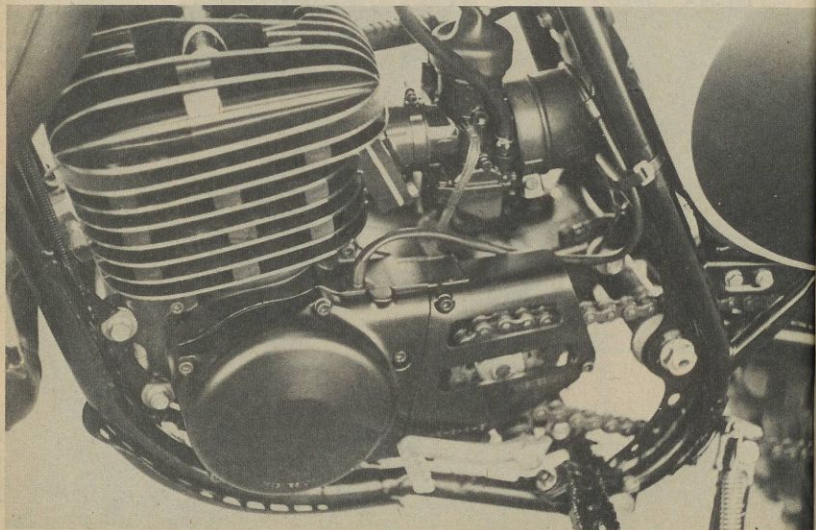
world. The rear tire goes exactly where you'd expect and it sticks, but the

The monocross Yamaha MX250B is all business with super rear suspension, magnesium parts and almost enough power.



The one weak point on a fine racer: forks that are too soft and too flexible to cope with the weight transfer from the rear.

The sight of no shocks isn't the thrill it once was. The top arms of the swing arm push and pull on the shock beneath the tank.



The MX250B engine looks like the YZ prototypes but lacks their power [and peakiness]. The gearbox works every time.



The front wheel doesn't have the dig it should for really tight turns even with the fork tubes pulled up in the triple clamps.

and the shift is faultless every time. The MX250B is supposed to come with a Skyway-type silencer to help quiet the stock pipe. The giant unit bolts on in place of the bologna-shaped stock muffler.

The Mono-cross Yamahas have some of the highest seats in motocross, but that's the price you pay for the longest suspension travel. The machine seems top-heavy only if you try to force it to lean to square off a bermed corner or make a tight broadside; the height seems to improve the stable feeling of the mount over most sections of the course. The fork legs are long enough to be moved up and through the triple clamps about an inch to the position shown in the photos. That fork leg position proved best for a half-dozen different riders and tracks. Lowering the fork legs can help to increase the machine's straight-line stability for desert-style racing with deep sand and/or broad-radius turns. If you can afford the price and are willing to buy the suspension tuning tools (or can find a helpful dealer to suspension-tune for you), the MX250B will give you the fastest ride you can find around most MX courses. It would take YZ-type porting and tuning and better forks to make it perfect, but for now there's nothing that much better in the 250 class.

YAMAHA MX250B

ENGINE

Type	single cylinder, two-stroke, reed valve
Displacement	246cc
Bore and stroke	70x64mm
BHP@rpm	NA
Advertised CR	7.54:1
Carburetion	38mm Mikuni

Overall gear ratios

First	19.065:1
Second	14.653:1
Third	12.132:1
Fourth	10.399:1
Fifth	8.913:1
Sixth	NA

RUNNING GEAR

Frame	double downtube
Rake and trail	31 degrees, 5.42 inches
Suspension	
front	telescopic forks
rear	single spring/shock with cantilevered swing arm
Tires	
front	300-21 knobby
rear	460-18 knobby
Brakes	
front	internal expanding drum type
rear	internal expanding drum type
Electrics	Hitachi solid state ignition; no provision for lights

GROSS MEASUREMENTS

Weight	232 pounds
Fuel tank	2.1 gallons

COMFORT RATING

Vibration	7
Suspension	9
Noise level	8
Seat	9
Handlebars	9
Start mechanism	8
Controls	8
Stand	9
Shift mechanism	10
Switches and instruments	10
Total	87

PERFORMANCE

1/4 mile	NA
0-60 mph	NA
braking dist. from 60 mph	NA

SUMMARY

A very serious machine for a serious competitor. The best rear suspension available, but it needs forks to match. The power is average by today's standards but the rear suspension makes more of it useable than on most MX'ers.