

# MiniCycle

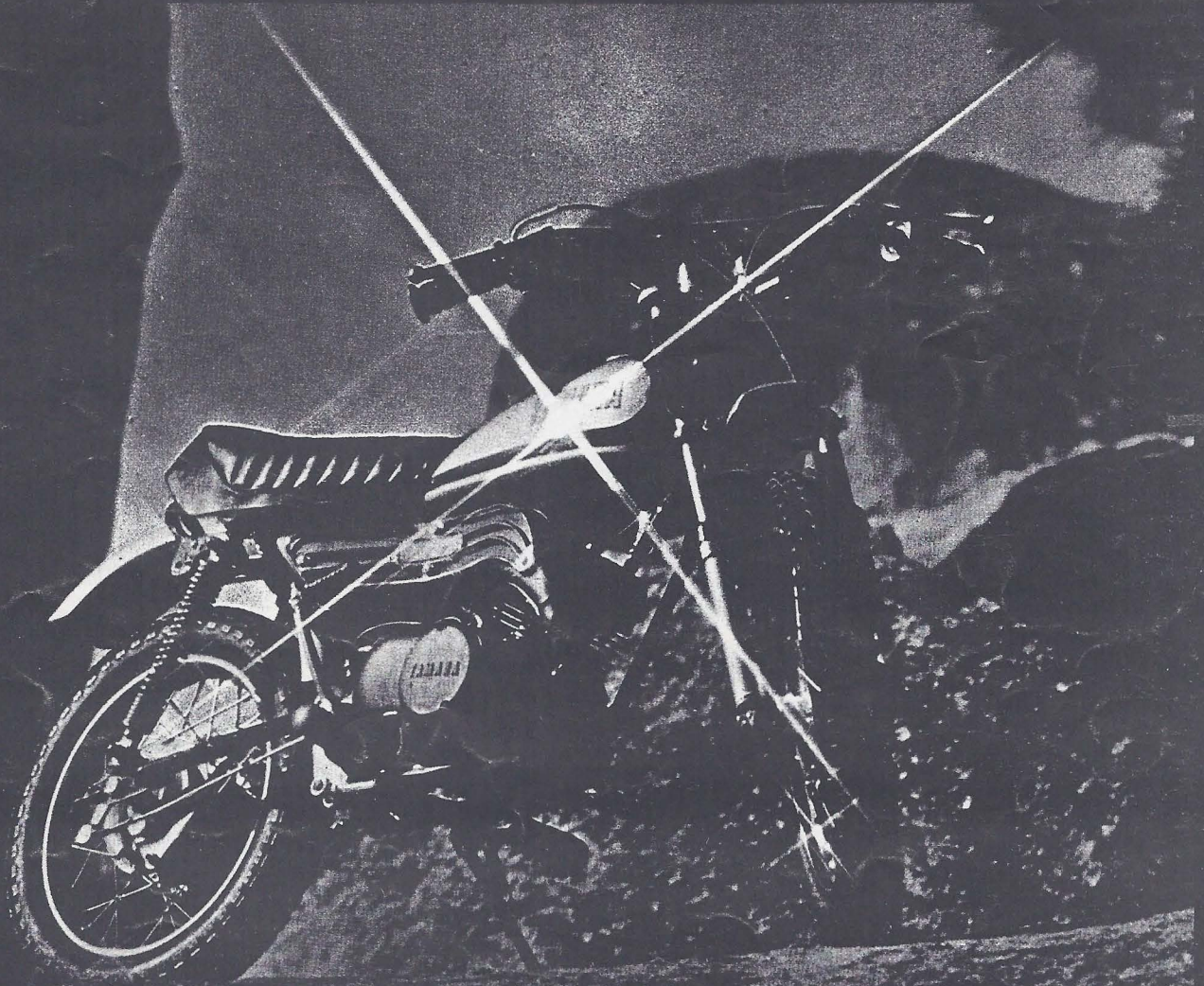
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**ELECTRONIC IGNITION; WHAT'S A MEGAPHONE?  
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YAMAHA & HARLEY MINIS FOR '73**



BIGGER THAN A MINI, SMALLER THAN A HARLEY



# YAMAHA MINI-ENDURO 80

## For '73, It's a Whole New Ball Game

Owners of Yamaha Mini-Enduros are, generally, a satisfied bunch. And there sure is a heck of a lot of them. As a group, they might ask themselves how Yamaha could improve on their machines. Perhaps they might even ask themselves why Yamaha should want to try. Well, fellas, and quite a lot of gals, progress is progress and far be it for us to stand in its way. Yamaha tried to achieve progress, and Yamaha succeeded. If this fact creates a good deal of heated domestic discussion as you load up your 60 for the next riding trip, we imagine that is what Yamaha was after.

Also, and let's face it, Yamaha is in a good deal of tough competition with another mini-cycle that shall remain nameless in this test but the name of that machine begins with an "H," ends with an "a," and has the initials of Sidney Lewis in it. There are no prizes for guessing the correct and full name. When we talk about competition we mean both in the market place and on the track. Once a rider has bought one or the other, usually nothing will shake his faith in the correctness of his decision. However, it is probably the decision-making process that concerned Yamaha and that resulted in the new Mini-Enduro, designated GT-1MX.

Major change for the new Mini-Enduro is in the engine. There have been other changes, some minor, some major, but it is the engine change that is going to get owners of the previous model (now discontinued although parts and service will, of course, still be available) buzzing. They could probably have lived

with the frame, wheel and other changes, but the new engine is going to cause a good deal of discontentment.

It is nothing like the previous engine. Gone is the rotary valve. Gone are the 58cc. In their place stands a 73cc engine fed through a 16mm Mikuni carb mounted on the back of the engine. The choke is the lever type operating a plunger and provision for operating this choke from the handlebars is not provided. Fortunately, it appears to be needed only to start the engine so there probably will be no need to grope around the engine to get it off when riding.

The engine follows Yamaha's recent developments in that it has a reed-valve (Torque Induction is their name) system. This year, all Yamaha 2-stroke models have Torque Induction. Recently, in a quick all-night session, Chuck Smith of Torque Engineering tore down the engine to take a look around inside. He reports that the transfer ports are paralleled by boost ports, similar to the layout of most of Yamaha's latest engines. Yamaha calls this type of engine "seven-ported." The reeds on the Mini-Enduro are mounted on a V-cage and there are only two leaves, compared with the more normal four leaf reed valves.

Although the bore and stroke (47mm x 42mm) is the same as the old rotary valve Yamaha "80," this is not the same engine. Undoubtedly, this bore and stroke was decided on to allow use of some of the same production machinery to reduce costs, but Chuck reports that

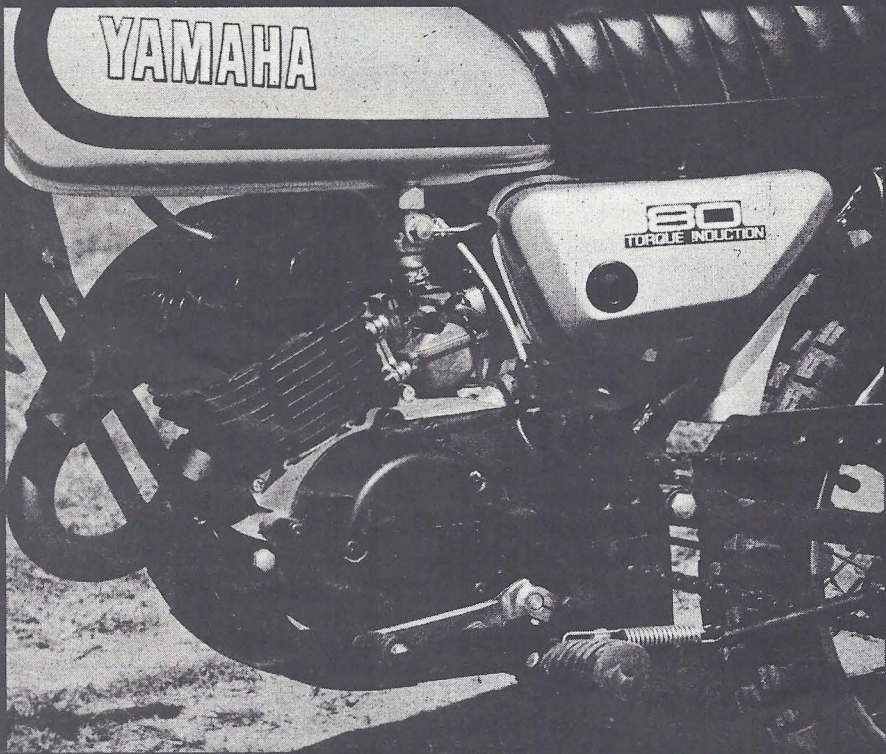
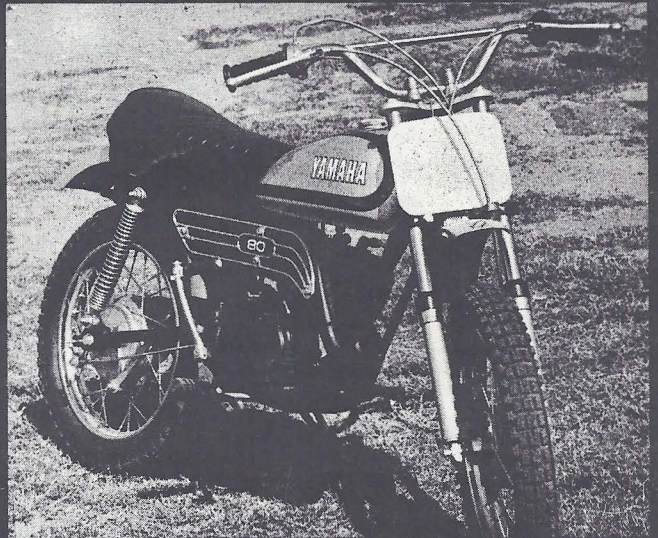
the lower end is not identical. The cylinder, piston, induction and exhaust systems are entirely different. Certainly, the power characteristics of the engine do not compare.

One thing we find irritating is the use of the "80" designation for this engine. The actual displacement is 73cc. Why Yamaha calls it "80," we don't know, but not many people will be fooled.

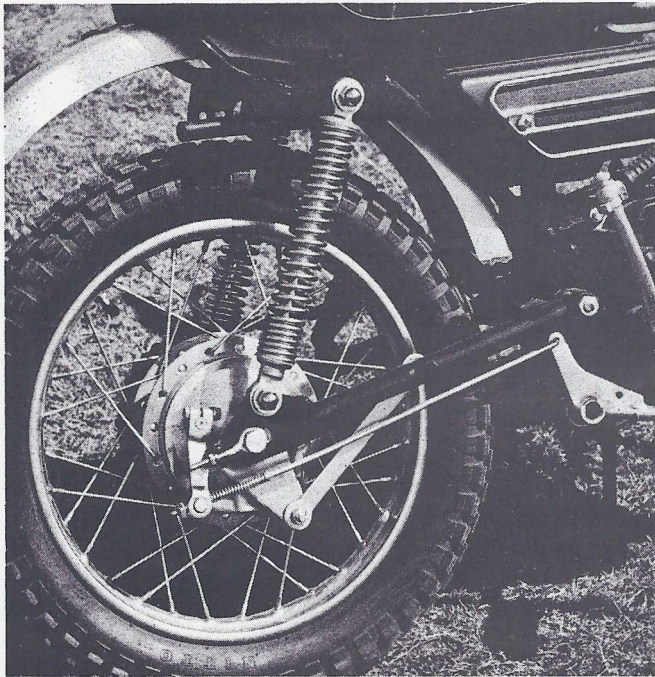
Remember how restrictive the air-cleaner was on the former Mini-Enduro? Well, this one is twice as bad. And servicing it is a major operation. It is tucked in back of the oil reservoir and the oil tank has to be removed before you can even see it. It promises to be nearly waterproof, which is nice, but in achieving this the Yamaha engineers made it nearly air-proof as well. The slot through which the air is channelled can only be called dinky. The filter itself is good, the oil-wetted foam type, but the tinkerer will be able to get an easy increase in power just by giving the air cleaner a better chance to breathe.

The cylinder is in a more upright position than formerly. It is angled forward about 20 degrees compared to the 45-or-so degrees of the 60cc engine. This means the crankcase is also different from previous models. It appears that the crankcase cover on the right side is somewhat slimmer than the old engine because there is no need to make provision for the carb. The pump for the auto lube system is still there, on the side of the crankcase, but it has been moved to about the same location as the carb used to be. Oil is pulled









down from the reservoir and pumped back up to the carb manifold where it mixes with the fuel/air flow. The details of the left crankcase cover are different although the basic layout is the same.

Something strange happened in the design of the new muffler. Although the dimensions appear roughly equal to the old muffler, it is mounted on the right side, opposite to previous design. Thus, it is obviously a new muffler. Yet in designing this muffler it appears the engineers forgot that the cylinder was going to be more upright. The result is that the muffler and the top of the cylinder are vying for the same space. The Yamaha people solved this by simply lopping off most of the cooling fins around the right side of the head and the top of the cylinder. Since this is where most of the engine heat is generated, we wondered at the wisdom of this move.

The surgery done on the fins was quite drastic. On the right side there is hardly anything left of the head fins or the top part of the cylinder fins. Since the rest of the finning is deep and looks as though it would dissipate a lot of heat, it occurred to us that the imbalance created by lopping off these fins could well produce a hot-spot.

We asked Chuck Smith about this. He said that it should prove to be no problem because fuel flow would control the cylinder head temperature. Questioned about the possibility of problems with a modified engine he said, "Still no problem. When you modify you increase the fuel flow so you're

back with a cool engine." Chuck knows as much about Mini-Enduros as anybody so we are inclined to take his word for it.

In one area, at least, owners of the former Mini-Enduros will feel right at home. The gear box is still the four-speed, down-shifting, unit that has always been used on the machine. There was talk, earlier, that Yamaha would go to the "one-down, three-up" system used on most Japanese machines but, as it turned out, this did not transpire. The gear box on the Mini-Enduro has always been a reliable, rugged, easy-to-shift, mechanism with few maintenance troubles, so we are not sorry to see it retained. On the other hand, if a new box had been introduced with five speeds, well, that would have been an entirely different matter.

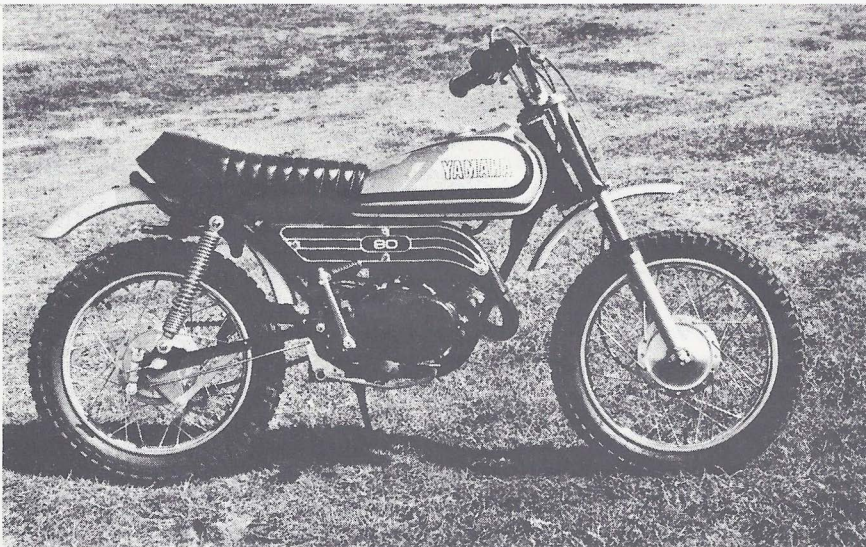
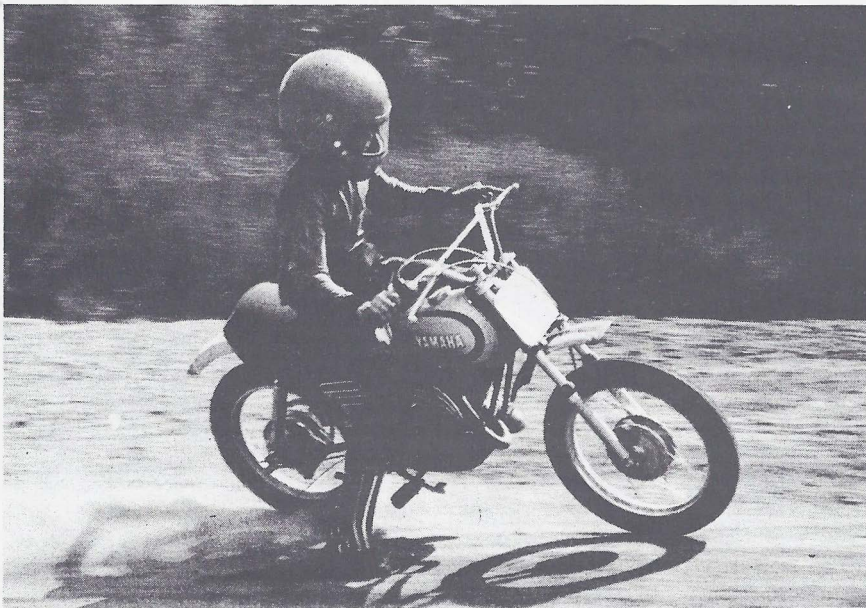
Although the general geometry and dimensions of the frame remain essentially the same, changes have been made to the design. The engine cradle loop is no longer bolted to the frame. Now it is welded. The reason it was formerly bolted may have been to allow removal of the forward-tilted cylinder head without having to completely remove the engine from the frame. This is not necessary with the more-upright cylinder position.

For the rest the design remains single backbone, double engine loop, a direct, though smaller, copy of the standard motorcycle type. The rear sub-assembly, seat-loop, is supported by a brace running from the back of the engine mount to the upper shock mounting bracket.

The swinging arm pivot point runs through the engine mount and the arms terminate in transverse bearing tubes through which the pivot bolt passes, providing plenty of bearing surface. Externally, the rear shocks look the same as previously used but our test riders indicated that they seemed to work better. Front suspension remains the same and this means an opportunity was lost. To our mind, the single spring in one side of the forks does not cut it, except for moderate use. Another opportunity was lost when new handlebars were not used as the Mini-Enduro bars have always been too narrow and the angle of the grips too far to the rear. Another of our criticisms, the welded lever mounts, applies to this machine as well as the last. However, the bars and controls are good and strong, and that's the most important thing.

Gas tank on the Mini-Enduro follows this year's styling pattern for Yamaha and is very attractive. Also it holds nearly 1-1/2 gallons of no-mix, straight, gasoline. The seat, this year, has been considerably improved, too. There is now enough padding in it to make it comfortable and it is hinged with a simple snap fastener, rather than the former, less-than-efficient, spring-loaded pin and total-removal method. Tools are located under the seat and are held in place with a rubber strap. Although our test machine was not equipped with lights (being the MX model) it would appear that the battery on the Enduro version will also go under the seat. Silver-painted steel fenders, matching





## MINI-ENDURO 80 MX

**Manufacturer:** Yamaha International Inc., P. O. Box 6600, Buena Park, Calif. 90620

### ENGINE

Engine type	Sngl. two stroke	Compression ratio	6.8:1
Bore	47mm	Carb	.16mm Mikuni, reed valve
Stroke	42mm	Ignition	Flywheel magneto
Displacement	73cc	Lubrication	Auto lube (oil mist)
Horsepower @ rpm	N/A	Fuel capacity	1.4 gallons
		Fuel requirement	Reg. gas

### TRANSMISSION

Transmission type	Four-speed gearbox	Clutch type	Wet multi disc
Primary drive	Helical gears	Final drive	No. 420 chain
		Gear ratios	N/A

### CHASSIS

Frame type	Sngl. backbone; dbL loop engine cradle	Tires:	
Wheelbase	41 1/2"	Front	2.50 x 15 x 20 1/2 dia.
Overall length	61 5/8"	Rear	2.75 x 14 x 19 3/4 dia.
Suspension:		Brake(s)	Internal expansion, frt. & rear
Front	Tele. forks, hydraulic dampening	Ground clearance	7 1/2"
Rear	Swinging arm	Seat height	25 1/2"
Wheels	14" frt., 15" rear	Handlebar height	34"
Price as tested	\$319	Dry weight	121 1/2 lbs.

the gas tank, and a front number plate, round out the appearance components.

The last major change in this year's Mini-Enduro is in the wheel sizes. The rear wheel has been dropped down from the previous 15-inch unit to a 14-inch. The front wheel remains at 15 inches but the hub has been switched around with the brake actuating lever now on the left side. This makes for somewhat easier routing of the brake cable.

Although the actual reduction in size of the front wheel is not very much, and the wheelbase remains the same, the change has a profound effect on the handling characteristics. The rear wheel now has a fatter tire, (with a 2.75 section) than the front 2.50 (the same as was mounted front and rear, previously). The outside tire diameters of the new set-up are 20-1/2-inch front and 19-3/4-inch rear. It is probably this slightly larger front diameter and slightly better rear traction that accounts for the improved handling.

Because of the change in rear tire diameter, the overall length of the new Mini-Enduro is a shade less, 61-5/8-inches as against 62-inches. Less easy to explain is the lower handlebar height. On our test machine the handlebar height was 34-inches whereas the former Mini-Enduro specs called for a handlebar height of 36-1/2-inches. Somewhere we lost a couple of inches.

The new Mini-Enduro engine displays very strong low end power characteristics. It pulls like a son-of-a-gun out of the hole and winds quite strongly through the middle ranges. At the top end the power is respectable but owners of the Mini-Enduro 60 will have difficulty detecting much difference (although we think there is some) between their machines and the new one, when the engine is wound fairly tight.

Going outside of our normal crew of test riders, we asked (not much persuading was necessary) several Mini-Enduro racers to ride the test machine and give us their impressions. To a man (and a couple of girls), they all said that it was a ball. Everybody praised the handling and some of the maneuvers we witnessed proved the point. One youngster, who had just moved up into the modified classes with his Mini-Enduro and who couldn't really be called an expert, was power sliding around the motocross turns like nobody's business.

Certainly, it is a most forgiving machine, firmly established in popularity, with a more powerful engine that is going to be a modifier's dream, and we can predict instant success for it without hesitation. □



