

CYCLE ROAD TEST

Yamaha HT1 90 Enduro

A three-quarters replica of the excellent Yamaha AT1, the 90 is another small bike that cuts through traffic and runs down cowtrails pretty well.

PHOTOGRAPHY BY THE AUTHOR

Yamaha's replacement for their discontinued 80cc and 100cc Trail models is the new HT1 90 Enduro. The new 90's forerunners were built strictly for off-road use, with little thinking done on/or provision made for pavement operation. More versatile than its predecessors, the new Yamaha 90 is put together for the expanding street-trail market. Like its competitors in the street-trail category, the HT1 is a compromise machine. The one remaining question is: what kind of a compromise and how good?

The 90 Enduro drops perfectly into the gap between the Mini-Enduro and the 125 AT1. In fact, the 90 is a three-quarters replica of the 125 Enduro; styling and layout follow the trend-setting DT1. The steel gas tank and Autolube oil tank are painted a

deep metallic purple, and the finish on the various components is smooth and clean. No splattered welds, and no orange-peeling paint either. The black three-quarter length seat has a pleated vinyl covering to hold the rider's seat on the saddle. The slight extra length in the saddle provides enough room for a passenger, so long as it's a child or a 90cc-sized wife. While folding footrests for both rider and passenger are standard, the suspension just barely handles one full-sized rider, much less two.

The upswept exhaust system, which carries a built-in U.S. Forestry-approved spark arrestor, is tucked away from the legs of riders and passengers. The chrome metal guard stays cool enough to touch even though it is fastened directly to the muffler body. The

inner baffle is removable; it should be cleaned every 1000 miles or so for maximum performance. Leaving the baffle out entirely fouls up the exhaust tuning and increases the operating temperatures of the engine. This in turn causes two things: a drop in the 90's performance and an ear-busting racket which will color neighbors angry. Leave the baffle in; go faster in peace.

The lighting system on the Enduro 90 now includes turn signals as standard equipment, as do all street-legal Yamahas for 1971. In traffic, the flashers give the bike rider a better chance of being seen by myopic motorists. And the new Yamaha taillight—which is huge—may fend off other inattentive car drivers seeking cheap thrills at your expense. Unable to make the six-volt

lamps any brighter, Yamaha has at least made things bigger and easier to see. On the trailways lights can be extra baggage; thanks to the flywheel ignition, all the lights can be stripped away if the rider wishes.

The wheels are 18-inch items on both ends. The trials-pattern tires are a good combination for street and moderate dirt riding, but they won't do the job in mud. Different tires and a larger front wheel would help, and Yamaha does carry a 21-inch front wheel as an option. Yet rewheeling and reshodding the Enduro 90 would resemble lacing an old lady into track shoes. She would have the traction, but not the legs and knees. The Enduro 90's suspension just isn't up to much more than a fast clip over a cow pasture. The front forks are similar to those on the 125 Enduro, but they don't work as well. The chromed shafts on the 90 are .125-inch smaller than the AT1 and flex when normal limits are exceeded. The damping can be increased to an acceptable level by changing to a heavier SAE weight oil. The rear shocks have five different settings, ranging from bad to worse. Even when the shocks are at the stiffest position a 150-pound rider can still bottom the unit. The damping is non-existent. When pumping the back end up and down, the only resistance is in the springs. Yamaha could have eliminated the marginal suspension on the HT1 by mounting the forks and shocks from the 125 AT1. The cost couldn't have been *that* much greater, and the pieces will fit right onto the smaller machine. Of course, these changes would create a machine that is nearly equal to the 125cc AT1 costing \$100 more—something Yamaha might not want to do.

The machine's mild steel tubular frame has a 1.25-inch backbone tube connecting the steering head to the swingarm pivot area. Smaller (.75-inch) double downtubes cradle the engine unit. The rear subframe is welded to a box-like affair that forms the swingarm connection point and ties into the main backbone right at the rear of the gas tank. The entire assembly is quite rigid and seems strong enough to handle an engine with twice the 90's punch. The tubular swingarm is gusseted on the forward end and easily handles the weight and torque output of the HT1.

The engine-transmission unit is the same physical size as its bigger brothers, the 125 and 175 Enduros. Many of the parts are interchangeable, such as gears, clutch and kick-start pieces, oil pump, and the outer cases.

Due to the 90's shorter stroke, though, the crankshaft assemblies can't be swapped. But they both share the same size bearings. With a lower-end capable of supporting twice its displacement, the HT1 internals should be as durable as rocks.

In the past, Yamaha has used a rotary valve induction system for the 100cc-and-under engines. The new 90 breaks tradition by using piston controlled ports with Yamaha's five-port transfer system for better performance. The cylinder on the HT1 is cast iron with generous finning for a machine the size of a 90, so the small single shouldn't overcook and seize. The rod is supported by caged rollers at the big end and the wristpin rides in needles. The aluminum cylinder head has a squish band combustion chamber like the larger Enduros, and the head features an extra tapped hole for a sparkplug or compression release.

GYT-kit power can be bolted straight on to the HT1 for \$118. This includes a "ported" cylinder, high compression head, racing piston with rings, 22mm Mikuni carb, expansion chamber exhaust, and all the necessary brackets and gaskets to install it. Thanks to the extra strength of the lower end, clutch and gear train, a GYT-kitted engine shouldn't be strained. Yamaha claims that the additional power and low weight of a kitted HT1 give it the performance of a 125, and this claim certainly seems reasonable.

The 90 Enduro's small size makes it an ideal machine for the wife or small-to-medium adolescents. The low seat height and light weight gives the smaller riders confidence. This enables them to learn to ride quicker and enjoy what they are doing. The controls push, pull, and twist easily. The ignition key/light switch is mounted on the top fork yoke and the turn signal and the high/low beam toggles live under the left thumb. All are easy to reach and operate. The waffle-pattern hand grips cushion the vibrations and jolts of riding and allow a better grasp on the bars during wet weather. The footpeg rubbers are grooved to help keep feet from slipping off, and the engine shifts go through in short, crisp moves. This wide powerband and the five-speed transmission allow the rider to use his machine for everyday around-town riding and still ramble down cowpaths on weekends without changing the overall gear. The rear wheel hub has a built in rubber shock absorber to take out road lurch before it pounds



A crisis-sized taillight dominates the rear.

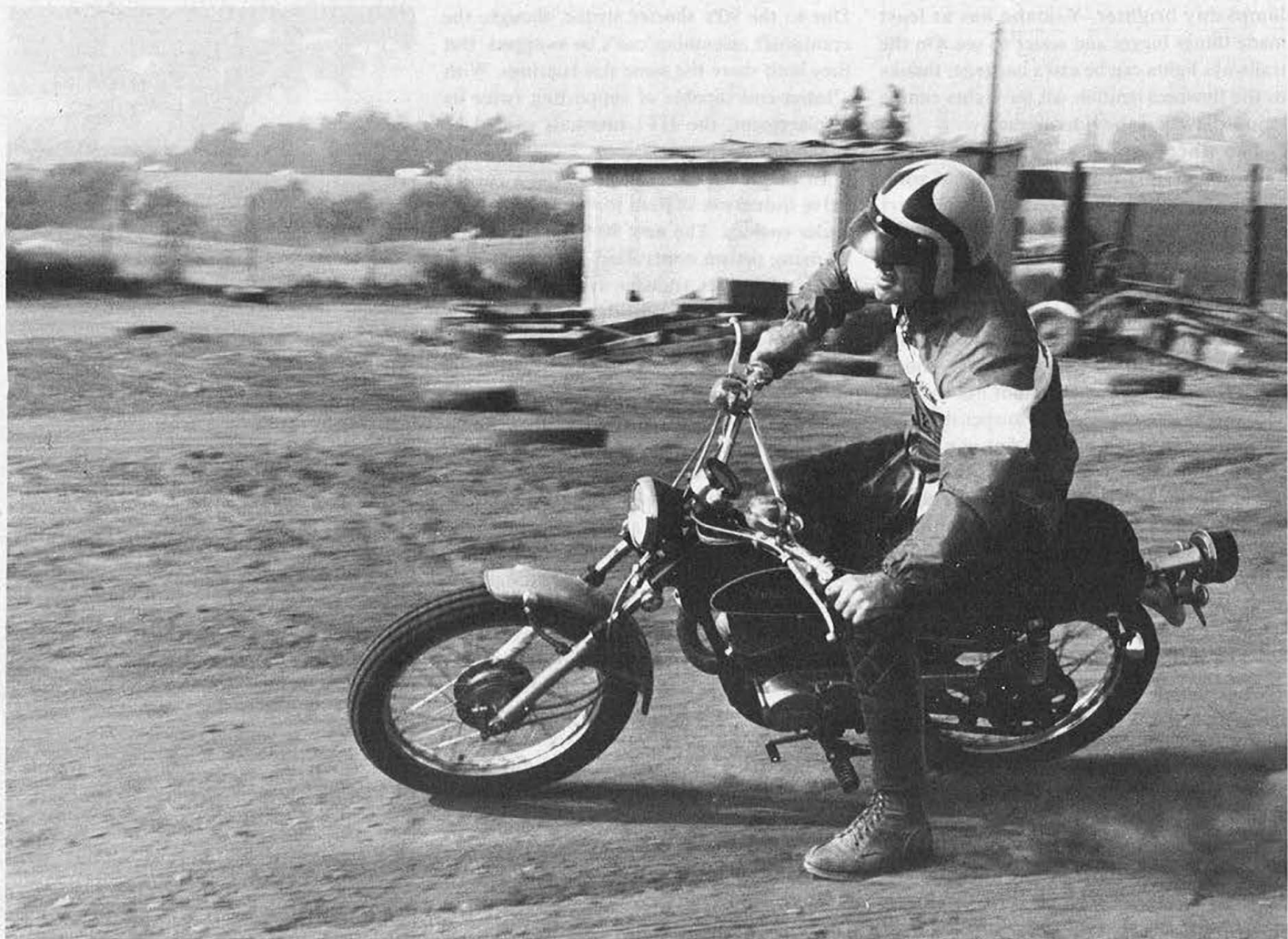


The piston-port engine is a good 90cc slogger.



Hard riding in the rough overtakes the forks.

The Enduro 90 is a machine with limits, but the Leisure Rider has limits too. Neither the bike nor the conservative rider can blitz through forest and field.



away on the driving components. The brakes work well and panic stops will lock up both wheels. In the dirt the brakes have some "feel," which signals an impending lock. Gradual pressure with the foot and hand allows control of the braking, even when traction is minimal.

The Enduro 90 is for the Leisure Rider. If they aimed the bike at the conservative weekend trailer, then Yamaha has hit the market target squarely. City streets, dirt roads, and winding cowtrails make the right pathways for the HT1. The little Yamaha, however, has limits. It is no machine for he who drills through field and forest, jumping over and bouncing off the environment. Such a pounding will beat the HT1's suspension too badly. The hard runner should buy up to the 125 Enduro; it's a better suspended machine. But if midtown traffic and gentle trails describe your scene, try the Enduro 90. ©

YAMAHA HT190 ENDURO

Price, suggested retail U.S.,	Air Filtration Oil-wetted foam
POE \$409	Ignition Flywheel magneto
Tire, front 2.75 in. x 18 in.	Bhp @ rpm 8.5 @ 7000 rpm
Dunlop Trials Universal	Mph/1000 rpm, top gear 8.0
rear 3.00 in. x 18 in.	Fuel capacity 1.7 gal.
Dunlop Trials Universal	Oil capacity 2.6 pints
Brake, front 4.32 in. x 1.00 in.	Lighting 6v, 45 watts
rear 5.11 in. x 1.10 in.	Battery 6v, 2 ah
Brake swept area 31.2 sq. in.	Gear ratios, overall (1) 32.23
Specific brake loading 11.3 lb/sq.	(2) 26.88 (3) 18.27
in., at test weight	(4) 13.44 (5) 10.74
Engine type Piston-port	Wheelbase 48 in.
two-stroke single	Seat height 29 in., with rider
Bore and stroke 1.96 in. x 1.79 in.,	Ground clearance 8.5 in., with rider
50mm x 45mm	Curb weight 195 lbs.,
Piston displacement 5.43 cu. in.,	with 1/2-tank of gas
89cc	Test weight 355 lbs., with rider
Compression ratio 6.8:1	Instruments Speedometer
Carburetion (1) 20mm Mikuni	Top speed62 mph