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YAMAHA RT-1B

Following in the tracks of the world's most successful dual-purpose 250, Yamaha's 360 RT-1 is sure to be a winner.

WHEN YAMAHA INTRODUCED their 250 DT-1 two years ago, it created little less than a sensation among the motorcycling public. Owners were delighted with its light weight, good pulling power and excellent handling. Dealers appreciated the fact that it required little service. With the success of the DT-1, the 125 AT-1 and 175 CT-1 machines evolved.

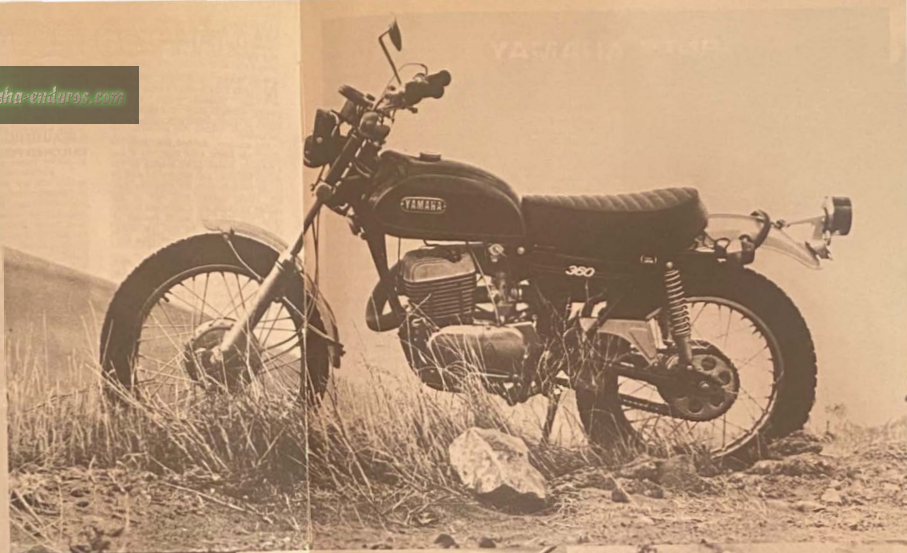
The logical successor was a big bore Single—the RT-1B—a 360 with a seemingly endless list of features. At last, a machine which is more than capable of keeping up with traffic on the freeway is just as at home in the boonies.

Outwardly, the RT-1B and the DT-1 look much alike. Their purposeful styling is accented by a cross-brace between the handlebars, a comfortable dual seat, Dunlop Trials Universal tires, and quickly detachable lighting. A bash plate protects the underside of the engine from rocks and logs. The slim gas tank permits the rider to keep his leg in close, improving his ability to balance. For the rider who needs more power than the 250 DT-1 offers, the RT-1B is the answer. It offers power in spades!

Decidedly oversquare (80-mm bore, 70-mm stroke), the RT-1B's engine pulls like the proverbial Clydesdale. Aided by Yamaha's five-port configuration in the cylinder, exhaust gas scavenging is much more efficient than the conventional three-port arrangement. Two additional ports, placed to the rear of the usual transfer ports, steer the incoming fuel/air charge into the area of the cylinder which contains burned exhaust gases from the previous power stroke. As the new charge reaches the combustion chamber area, the spent gases are forced out of the cylinder through the exhaust port.

AN EXCELLENT TRAIL MACHINE

The RT-1B's effective power band begins at just over 2500 rpm and continues right up to the 6500 rpm red line. Even with rather tall overall gearing for the street, it is an excellent trail machine, and has enough power to finish well in 360-class motocross races with muffler intact.



CYCLE WORLD
ROAD TEST





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Yamaha's Autolube oil injection system is retained and works faultlessly. The Autolube precludes mixing the oil and gas in the gas tank, a job which is somewhat messy and inconvenient. Instead, oil for lubricating the engine's internals is carried in a separate oil tank under the left-hand side of the seat. A variable-volume pump is gear driven from the right-hand side of the crankshaft through a reduction gear. The throttle cable divides under the gas tank, with one part going to the carburetor and the other to the oil pump. Varying the throttle opening thus varies the oil pump opening, and oil is supplied to the engine in the amount required. A larger (5.5mm) plunger is employed in the RT-1's oil pump because of the greater quantity of oil required by its big engine.

Six moulded cork and seven dimpled steel plates go together in the RT-1B's aluminum alloy clutch hub and do an excellent job of transmitting the engine's claimed 26 lb.-ft. of torque to the transmission. Even with considerable slippage while negotiating "picky" trials-type sections, the clutch never got unduly hot or slipped by itself.

Six coil springs take up shock between the engine and the transmission, reducing the possibility of drive train fatigue and chain snatch. The chance of clutch pushrod failure is minimized by the use of a steel ball between the two pushrods which allows the shorter rod to rotate with the clutch pressure plate when the clutch is disengaged. Helical cut gears are used on the engine pinion and the clutch housing to reduce noise.

The RT-1B's mechanically quiet engine is very impressive. Cast-in spacers between the cylinder fins also help keep the noise down.

COPE WITH ANY SITUATION

As with the other Yamaha Singles, gear shifting is a dream. Five closely spaced ratios provide just the right amount of gear reduction necessary to cope with almost any situation, from ultra-slow plonking about in a field to cruising at freeway speeds.

For serious trail riding, where top speed is not a consideration, the substitution of a 14-tooth countershaft sprocket for the standard 15-tooth item would increase first-gear flexibility somewhat.

Shifting is positive, due to the transmission's shifting cam drum, with three shifting forks, two of which are mounted on rollers. Only light pressure is necessary to move from one gear to the next. This superb action, coupled with the transmission's closely spaced ratios, made clutchless shifting a breeze. We found ourselves banging shifts both up and down without a sign of protest from the gearbox.

Both the mainshaft and the layshaft are supported on each end by large, trouble free ball bearings. An extension of the gearchange shaft makes it possible to install a right-hand gear pedal, following the British tradition.

Ignition duties are handled admirably by a flywheel magneto which contains a lighting coil for charging the 6V battery, and operating the headlight, turn signals and horn. Thankfully, an automatic spark advance has been incorporated to reduce the possibility of kick-back while kickstarting such a large Single.

In addition to the spark advance, a partial compression release is located on the front of the cylinder. This unit relieves some of the effort necessary to crank the engine, but is not suitable for compression braking. An additional spark plug hole is tapped into the cylinder head for those who wish to install a compression release, or the hole may be used to carry a spare spark plug.

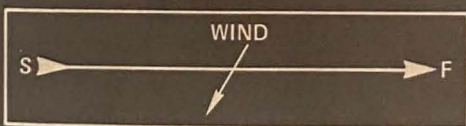
YAMAHA RT-1B

SPECIFICATIONS

List price	.....	\$925
Suspension, front	..... telescopic fork	
Suspension, rear	..... swinging arm	
Tire, front	.....	3.25-19
Tire, rear	.....	4.00-18
Brake, front, diameter x width, in.	.....	5.9 x 1.0
Brake, rear, diameter x width, in.	.....	5.9 x 1.0
Total brake swept area, sq. in.	.....	37.2
Brake loading, lb./sq. in.	.....	10.7
Engine, type	..... two-stroke Single	
Bore x stroke, in., mm	.....	3.15 x 2.76, 80 x 70
Piston displacement, cu. in., cc	.....	21.42, 351
Compression ratio	.....	6.3:1 (corrected)
Claimed bhp @ rpm	.....	30 @ 6000
Claimed torque @ rpm, lb.-ft.	.....	26.0 @ 5500
Carburetion	..... Mikuni VM 32 SH	
Ignition	..... flywheel magneto	
Oil system	..... oil injection	
Oil capacity, pt.	.....	3.5
Fuel capacity, U.S. gal.	.....	2.5
Recommended fuel	..... premium	
Starting system	..... kick, folding crank	
Lighting system	..... AC, 6-V battery	
Air filtration	..... wet, polyurethane foam	
Clutch	..... multi-disc, wet	
Primary drive	..... helical gear	
Gear ratios, overall: 1		
5th	.....	6.17
4th	.....	8.04
3rd	.....	10.49
2nd	.....	14.40
1st	.....	20.38
Wheelbase, in.	.....	54.7
Seat height, in.	.....	31.5
Seat width, in.	.....	9.5
Handlebar width, in.	.....	30
Footpeg height, in.	.....	10.7
Ground clearance, in.	.....	10.0
Curb weight (w/half-tank fuel), lb.	.....	268
Weight bias, front/rear, percent	.....	49.5, 50.5
Test weight (fuel and rider), lb.	.....	398

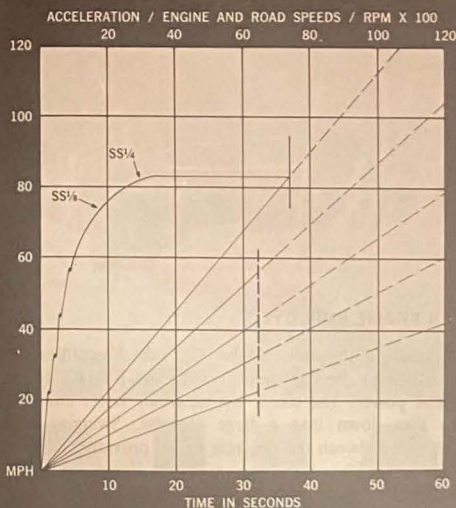
TEST CONDITIONS

Air temperature, degrees F	.....	76
Humidity, percent	.....	51
Barometric pressure, in. hg.	.....	29.99
Altitude above mean sea level, ft.	.....	350
Wind velocity, mph	.....	2-6
Strip alignment, relative wind:		



PERFORMANCE

Top speed (actual @ 7400 rpm), mph	.....	83.72
Computed top speed in gears (@ 6500 rpm), mph:		
5th	.....	73
4th	.....	57
3rd	.....	44
2nd	.....	32
1st	.....	22
Mph/1000 rpm, top gear	.....	11.3
Engine revolutions/mile, top gear	.....	5325
Piston speed (@ 6500 rpm), ft./min.	.....	2980
Lb./hp (test wt.)	.....	13.2
Fuel consumption, mpg	.....	49
Speedometer error:		
50 mph indicated, actually	.....	46.20
60 mph indicated, actually	.....	54.74
70 mph indicated, actually	.....	63.51
Braking distance:		
from 30 mph, ft.	.....	46.0
from 60 mph, ft.	.....	165.0
Acceleration, zero to:		
30 mph, sec.	.....	2.3
40 mph, sec.	.....	3.0
50 mph, sec.	.....	3.9
60 mph, sec.	.....	5.3
70 mph, sec.	.....	7.6
80 mph, sec.	.....	12.5
Standing one-eighth mile, sec.	.....	8.9
terminal speed, mph	72.5
Standing one-quarter mile, sec.	15.39
terminal speed, mph	82.19



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BEEFIER FRAME EMPLOYED

The frame is quite similar to the DT-1's double-cradle unit, but is sufficiently beefier to cope with the RT-1B's added weight and power. The classic double-cradle lower and rear portions slim down into a large toptube. Swinging arm mountings are between the two rear tubes, providing a lot of bearing area for the swinging arm shaft. Unwanted frame flexing is held to a minimum and the rear section of the frame serves to support the seat and provide an attaching point for the rear fender.

The forks are very similar to the DT-1's and provide over 6 in. of travel. Dampening has been improved considerably over

the RT-1. Spring rate seems nearly ideal for combination street/trail riding, although stiffer springs would be necessary for racing.

Rear suspension units are large, with huge shafts and improved dampening. Their stroke is 3.5 in. and the springs are three-way adjustable to suit rider weight and riding conditions. On the softest position, the rear units were fairly easy to bottom out when jumping the machine, but they are easy to adjust; the Japanese reputation for building spongy shocks is rapidly disappearing.

A fluid-type steering damper now nestles beneath the bottom triple clamp and provides progressive dampening, according to how fast the forks are deflected from side to side. At no time did we feel that the dampening was other than perfect.

With 10 in. of ground clearance, the bike sits high. The handlebar-seat-footpeg relation didn't suit us all, the main complaint being the footpegs are a little too high and the handlebars a little too low to allow adequate comfort and control while riding in a standing position. We would sacrifice a little ground clearance and a thinner seat to lower the machine. Another small complaint is that the exhaust pipe and heat shield protrude too far out, resulting in banged right calves. Another inch farther in would be perfect.

PLENTY OF POWER

Riding the RT-1B was exhilarating. With good handling characteristics and plenty of power on tap, power slides were the order of the day. Non-judicious use of the throttle would produce wheelspin in the lower three gears in the dirt, and an occasional unintentional wheelie. There is no break in the power delivery from just under 3000 rpm right up to the 6500 red line, and the bike could be run even higher without apparent strain. Of course, the power falls off abruptly above 6000 rpm or so, and it was rarely necessary to spin higher than 5000 to go as fast as we wanted.

Fast, bumpy sections could be blasted through with ease, aided by the machine's moderate weight of just under 270 lb. The RT-1B's hillclimbing ability was limited only by the amount of traction we could obtain with the trials section rear tire. There would seem to be no reason for hopping up one of these powerhouses for any purpose other than racing.

Finished now in gleaming black with a red pinstripe on the tank, silver-painted fenders and chrome wheel rims, the RT-1B presents a handsome package. The turn signals were a sore spot, however, as the front units are clamped around the inner portion of the handlebars and seem to be an afterthought. They also tend to shine into the rider's eyes at night. The rear units are mounted to the rear frame section by welded-on ears. They are easy to remove, as are the headlight and taillight. Rubber mountings for the fenders, speedometer, tachometer, and taillight reduce metal fatigue and breakage, and show Yamaha's concern about building a quality product.

Large displacement two-strokes aren't usually noted for outstanding fuel consumption, but Yamaha has been known to defy tradition before.

Splitting up our on-the-road riding between city and freeway driving, we were able to log a gas consumption figure of 49 mpg. This compares very favorably with smaller machines, and should appeal to the person who depends on his RT-1B for transportation back and forth to work.

As for reliability, just take a look at the results of the latest Baja 1000... a Yamaha RT-1B won the motorcycle division in record time. This reliability, coupled with fine styling and abundant power, should make the RT-1B a popular bike. ☐