

# YAMAHA RD350

Advertising a machine as being race bred is nothing new, but coming up with the performance to back up that statement seems to occur noticeably less often.

Yamaha elected to change the prefix of their 350 street unit this year to RD. They had used this same prefix on their European racing machinery in the past and we don't feel they are stretching things a bit in applying this to their 350 (or their RD 250). Racing success in the early and mid-sixties greatly helped sales of their street units. Their old 250cc YDS models, no doubt, attracted many customers as the 250 racing versions started winning—not only winning, but turning in seven-out-of-the-top-ten performances at Daytona. Today it is more like a clean sweep unless Yvon gets his Bighorn in there somewhere.

In 1968 a 350 Yamaha finished second at Daytona to help stimulate

## ASIDE FROM ACCELERATION, HANDLING, STYLING AND ECONOMY—WHAT DOES IT REALLY HAVE TO OFFER?

the sales of the new 350 street unit. Since then things seem to have gotten even better. Their 350's have taken Daytona the last two years now, knocking off the 750's.

A spirited ride on the RD350 should convince most enthusiasts that there is about as much handling and performance as could reasonably be expected in a machine designed for street use. The knowledge gained on the race circuits obviously hasn't been locked away somewhere, reserved solely for the works units. Much of it seems to be there, in a de-tuned fashion, for the street rider. Yamaha will be glad to sell you a RZ racer if you want to pursue the checkered flag but for a greater number of riders their RD350 seems to be a near ideal compromise of streetability and racing performance.

Yamaha is the first (and so far, the only) modern major manufacturer to offer the public a motorcycle with reed valve induction. The registered Yamaha trade name is Torque Induction. Introduced in 1972 on their street/trail bikes the Torque Induction proved to be quite advantageous for this type of machine. It increased the power where it was

most needed, at the lower end. This year Yamaha saw fit to incorporate this reed valve on three of their two-stroke street machines: the RD-350, the RD250 and their new RD60.

What Torque Induction does is supply the engine with the correct air/fuel mixture, based on the demand of the engine rather than the arbitrary mechanical induction system, such as the piston port or rotary valve method. Only when manifold pressure reaches its maximum does the reed valve open permitting delivery of the fuel mix. A larger charge is drawn in because of the stronger vacuum present at that instant and this improves the low and mid-range power.

The reed valve also prevents the blow-back of unburned gasoline toward the carburetor. This prevents the unused fuel from joining the incoming fuel, thus creating a rich mixture and blubbery performance. Naturally this reduces the incidence of loading up or fouling the spark plug to the point that it expires.

Also unique, specifically with the RD350 engine, is the seventh port which is claimed to give the engine more muscle at the top end. It does just what Yamaha claims. The seventh port allows more fuel/air mixture to be rammed into the combustion chamber and simultaneously improves the scavaging or removal of exhaust gases. After spending some time on Yamaha's 1972 350 (the R5C) and then having the opportunity to ride the RD350, we are convinced that these two engine changes account for the considerable increase in performance.

As a middleweight motorcycle the RD350 has most of the desired qualities that one would look for in both larger and smaller motorcycles. The RD is small, compact and relatively light, weighing in at 342 pounds with a full tank of gas. It has a tubular double cradle frame that adds a considerable amount of stability to the handling and cornering of the machine.

These aforementioned design considerations plus a high horsepower to weight ratio creates a motorcycle that is the rocket ship of its displacement class. We have not ridden a quicker 350. In fact, the 350 is only about a half second slower in the quarter than their 750 roadster. The RD350 is quite a hand-

some looking machine, one of the better efforts from across the great western pond. The quality of the finish of the machine rates an A-OK. The quality of the castings also deserves superlatives. Paint and chrome are also flawless, and the paint design of the 3.2 gallon tank is quite distinctive.

The saddle is quite comfortable for two-up riding. It allows enough room for both passenger and rider and is low enough to the ground so even smaller riders can plant both feet on the earth.

One complaint is a strap placed across the middle of the seat. It is our understanding that some states require this strap, evidently so the passenger can have something to hold onto. Perhaps these legislators have overlooked the presence of the motorcycle operator right there in front of the passenger. He is much easier to hang onto if the passenger feels the need. We've never seen anyone holding onto a seat strap—have you? Unfortunately the strap seems to fall just where most riders prefer to sit. This means that the passenger can't grab it anyway, and it is also uncomfortable for the rider sitting on top of it.

Both the 350 and 250 RD engines are identical—almost. The 350 has a ten millimeter larger bore and also one more tooth on the countershaft sprocket. This is a very practical consideration as far as parts and maintenance are concerned.

Yamaha has had good results as far as durability with their 350 racing engine and we feel that their street version of the twenty-one inch powerplant is virtually bulletproof.

We were able to ride two-up quite comfortably at 70 mph (an indicated 6500 rpm in top gear) for as long as the gas would last. This 6500 rpm is approximately three-quarters of the indicated 8500 rpm redline. Those who like to push that needle closer to the red zone won't have to worry about any ill effects to the engine. We can't say the same about possible ill effects to the pocketbook however, in the form of speeding tickets. You can spin the 350 up past 80 mph without realizing it. The engine doesn't seem to be laboring and the stability of the bike easily lures the rider up to speeds frowned upon by the local constabulary. Our top speed, indicated, was 102 mph.

Yamaha has been building smooth positive gear boxes for years now. The six-speeder on the RD-350 is no exception. They added a sixth speed to this year's model and it is a welcomed asset. The six speeds allow for just the proper gear for negotiating hills and twisting roads. Even with one more speed stuffed into the small compact gearbox we never had a problem finding neutral. Not once did we either overshift or have the gear box jump out of gear.

At the dragstrip we thoroughly tested the clutch to see how much abuse it would take. It seems to be willing to take all you can give it.

Motocross riders looking for a street mount would probably feel right at home on the RD. We're referring to the eagerness of the front wheel to get airborne if you gas it. At the dragstrip or the red lights it is prudent to pay attention to what is happening up front. We discovered that opening the throttle all the way while running in the power band in the lower gears got the front end up higher than we particularly care for.

As you would suspect, throttle response is instantaneous in any gear, provided the engine is in its power range. That range seems wider than it actually is because of the close ratio six speed box. It is possible to ride the bike around town without having to keep it on the boil with incessant shifting. Here's where the Torque Induction helps out because the revs can drop in slow traffic but the rider does not have to worry about the bike instantly loading up on him.

The RD can be somewhat difficult to start on cool mornings. We attribute this to the "sticking" of the reed valves. If this reluctance is encountered, just keep kicking. It will eventually start. On a warm day, or with a previously warmed engine, two kicks usually gets the job done. The RD offers primary kickstarting. It is possible to start the engine with the gearbox in gear, provided the clutch is disengaged. After a few seconds it is possible to turn the choke off and let the machine idle until operating temperature is achieved.

The engine noise is less than might be expected. The exhaust noise was also quieter than many two-strokes. After many miles on the machine it can start to get annoying. The engine lubrication is by Yamaha's oil injection Autolube. Our experience indicates that the RD350 is capable of traveling approximately eight hundred miles on a tank of oil. Capacity is 2.1 quarts.

The RD350 is one bike that is truly

a pleasure to ride. Unless you are going exceptionally fast, and breaking every law in the book, it is impossible to scrape anything on the ground. If you try to lean it over until the center stand or the pipes scrape, you may find that the first thing that scrapes the ground is the rider. In other words, the bike can be leaned to the limits of traction without any worries about digging anything into the pavement.

The tubular double cradle frame is exceptionally strong and well designed. High speed cornering simply involves turning the machine. There is none of that hanging-onto-a-herd-of-galloping-buffaloes feeling.

We do feel that the wheelbase, at 52 inches, is somewhat shorter than necessary. Another two inches added to the wheelbase would make the machine handle somewhat slower and eliminate the need for the hydraulic steering damper fitted to the underside of the triple clamp. We feel that this damper is definitely a handicap at slower speeds such as encountered in heavy traffic. It makes the front end feel sluggish and does not allow the precise steering we would like to see. Once at speed the ill effects of the damper disappear and the Yamaha handles like a two-wheeled slot car. A first time rider of the unit, unaccustomed to the fast feel of the steering, may be somewhat uneasy initially. Once

acquainted with the bike he will most likely discover that this quick feeling is sometimes an asset.

The front and rear suspension units are a well matched pair. The rear suspension is one of the better setups we have found on any road machine. It is possible to preload the spring to five different positions to adjust for the weight of the rider, passenger and/or load. We found that the suspension worked quite well in the second position for solo riding, and either the third or the fourth seemed best with a passenger.

The front forks smooth out the surface rather well, with no inclination to nose dive or bottom if a handful of front brake is applied. The brakes work exceptionally well. They are approximately the same size as units used on big bore roadsters two hundred pounds or more, heavier than the RD. The 10½ inch disc brake on the front, new this year, offered us positive and smooth stopping



under all conditions. Ditto for the rear internal expanding shoe brake.

The placement of the handlebar controls on the Yamaha are well thought out, perhaps the best we've seen to date. All necessary controls such as horn button, headlight dimmer and turn signals can be reached easily. The instrument panel includes both a tachometer and speedometer. The tachometer is actually quite hard to read until one becomes more familiar with the dial. There are so many minute divisions stuffed between each 1000 rpm line that it does take some practice to note the engine's activity with a rapid glance. The speedometer includes an odometer and trip meter.

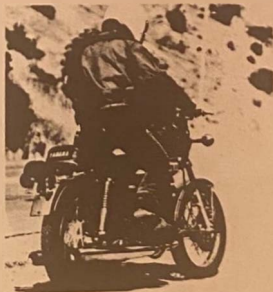
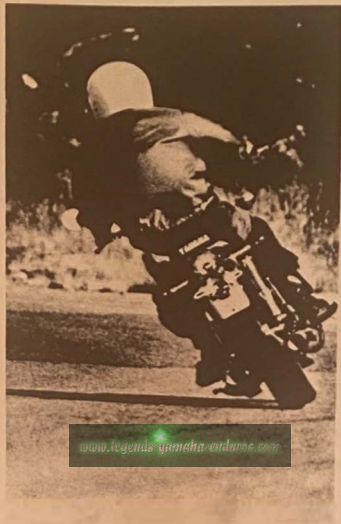
Located between the speedo and tach is a little safety feature that Yamaha introduced just this year. Aside from the left and right flasher indicators, high beam indicator, and neutral light indicator, there is a red light that tells the rider whether or not the stop light is working. The light glows as the front or rear brake is applied. If it doesn't light up the rider knows his stoplight is not functioning.

At the drag strip we were able to run the RD through the quarter mile in 14.28 seconds with terminal speed of 91.56 mph. Those figures top any other 350 we have tested.

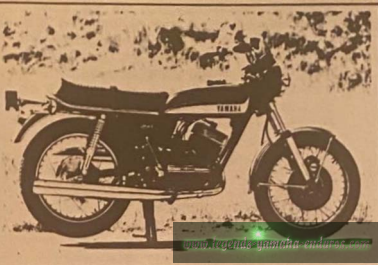
After several hundred miles of testing we were surprised to find that the fuel consumption was exceptionally low. We were able to average 42 miles to the gallon. For a high performance machine that continually invites its rider to turn it on, that's not too bad.

In the comfort department any trips exceeding 200 miles left us with aching shoulders and a hunched back. We feel that this discomfort can be traced to the relationship of the handlebars to the seat. The footpegs seem well placed and offer a reasonable amount of room for riders with all but the longest legs. The pegs are rubber covered and folding. The twin cylinder middleweight was surprisingly smooth for high speed, long distance touring. In fact, we weren't bothered at all by vibration, which we feel is rather common, even on larger "touring" machines.

For \$848 we definitely feel that the RD is a worthwhile buy for the rider who is performance minded as well as thrifty. While the bike is also quite well suited for the milder rider it has the ability to deliver off the line, through the esses and at high speeds. Just remember to keep the front wheel down and have at it with this race developed offspring of the 750 giant killer. ●



# yamaha rd-350



Engine Type	Two Cylinder, Two-Stroke
Bore and Stroke	84 x 54 mm
Displacement	347cc
Compression Ratio	8.8:1
Claimed Horsepower	39 hp @ 7,500 rpm
Claimed Torque	28 ft./lbs. @ 7,000 rpm
Engine Red Lines @	6,500 rpm
Ignition	Battery
Starting System	Kick/In Any Gear
Carburetion	28mm Mikuni
Lubrication	Autolube
Type of Transmission	Constant Mesh 6-Speed
Clutch	Wet Multiplate
Internal Gear Ratios	(1) 2.571, (2) 1.777, (3) 1.318, (4) 1.040, (5) 0.888, (6) 0.785
Final Ratio	8.0:1
Countershaft Sprocket	15
Rear Wheel Sprocket	40
Quarter Mile Acceleration:	
Terminal Speed	91.58 mph
Elapsed Time	14.28 sec.
Actual Speed at Speedometer Indicated 60	58 mph
Actual Speed at Speedometer Indicated 80	78 mph
Indicated Top Speed	102 mph
Length	80.3 in.
Seat Height	32 in.
Wheelbase	52.0 in.
Ground Clearance	6.1 in.
Listed Dry Weight	311 lbs.
Actual Weight, Full Tank of Gas	342 lbs.
Front Tire Size	3.00 x 18 in.
Front Brake Type	Hydraulic Disc
Front Brake Size	10.5 in.
Rear Tire Size	3.50 x 18 in.
Rear Brake Type	Internal Expanding
Rear Brake Size	8 in.
Air Filtration	Dry, Paper Filter
Lighting	12V, 25W/35W
Battery Type	12V, 5.5 AH
Fuel Tank Capacity	3.2 gal.
Fuel Reserve	0.5 gal.
Oil Tank Capacity	2.1 qL
Gear Box Capacity	1500cc
Average Fuel Consumption	42 mpg
Front Suspension	Telescopic Double Damping
Rear Suspension	5-Way Adjustable Spring Over Shock
Frame Type	Tubular Double Cradle
Steering Damper Type	Friction/Hydraulic
Color	Brandy Red
Retail Price, Los Angeles	\$848.00

#### Distributor

Yamaha International  
6800 Orangethorpe Ave., Buena Park, Calif. 90620

## IMPRESSIONS

	POOR	FAIR	AVERAGE	GOOD	EXCELLENT
<b>ENGINE</b>					
STARTING				●	
EXHAUST NOISE				●	
MECHANICAL NOISE					●
POWER RANGE				●	
ACCELERATION					●
THROTTLE RESPONSE					●
VIBRATION				●	
CLUTCH					●
TRANSMISSION					●
<b>CHASSIS</b>					
HANDLING				●	
SUSPENSION				●	
RIDER COMFORT			●		
BRAKES					●
TIRES					●
CONTROLS					●
STYLING					●
FINISH					●
INSTRUMENTATION				●	
LIGHTING				●	
TOOL KIT				●	