

SPECIAL

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**ESPECIALLY
FOR CANADA
Yamaha's RD350H
super stroker
here at last**

**Testing Suzuki's
GS750E: Cadillac
of the back roads**

**Two dirt tests:
Kawasaki KX420
and Yamaha YZ465**

**Looking back
at Cycle Canada's
first 10 years**

**Looking ahead
at the bikes of
the next decade**



**1981 Yamaha
RD350H**



**CYCLE
CANADA**

TEST

YAMAHA RD350

WILD THING!

Yamaha's pavement water-pumper ups the ante in the street performance game

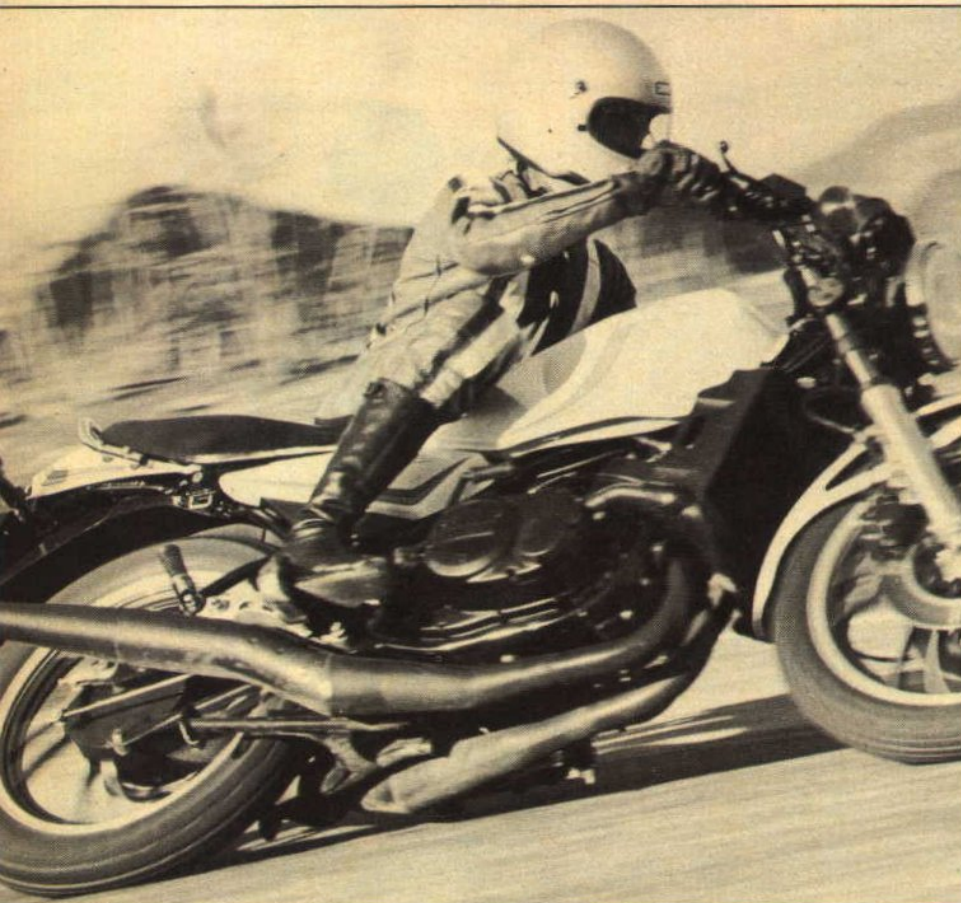
Sporting riders and production racers have been drooling over it since it was introduced in Europe in 1980. Yamaha has been swamped with requests—nay, demands—that it be imported to Canada. Finally it's here, and it was worth the wait. The RD350 has arrived and sporting bikes of all sizes have a rude shock in store.







Touching down any part of the RD350 requires nerves and ability beyond the norm.



The RD handles so well that cruising at maximum bank attitudes becomes easy.

YAMAHA RD350

Even in 1981, a year of innovation, change and introduction of new models galore, the RD350 is something special. It displaces only 347 cc, when 400 has been considered the absolute minimum for street sport bikes for years. It's a two-stroke, when even off-road machines are shunning the design and turning to valves and cams. It's liquid-cooled, which is unusual, although not unique. It doesn't have an electric starter, which is unique for new street models this year. And it uses a monoshock rear suspension, which was unique to the street when the bike hit European shores in 1980.

This RD350 is the outcome of a long

history of small sporting bikes from Yamaha dating from before 1973, when the first air-cooled RD350 was introduced. This first RD was a bomb with the engine mounted well back in a short wheelbase—wheelie city, particularly combined with the extremely peaky powerband.

In 1976 Yamaha tamed the bike somewhat, detuning the motor for less peakiness, adding 50 cc to restore lost power and creating a new frame to reduce the tendency to unicycle down the road. The new frame also greatly improved road holding, making the bike the killer in road racing production classes, a position the bike holds to this day.

Three years later, the RD was the only two-stroke sport bike still in production,

and Yamaha apparently decided to emphasize the sport aspects. Hence was born the Daytona Special, a pearl white and red jet with better suspension, more power and improved cornering clearance.

The new motor produced 41 hp, while vehicle weight was down to 156 kg. The extra heat produced by the added power was dissipated in part by a new shroud on the cylinder head similar to the Ram Air system Suzuki had used in previous years. The deflector gathered air and forced it through and around the head to keep engine temperatures to a tolerable level.

The Daytona Special was a true sporting rider's bike, a machine at home on the race track without being uncivilized on the street. It seemed like the ultimate. Canadian riders were twice blessed, since the version our neighbours south of the border got was strangled to meet EPA emission rules and produced only 37 hp.

There is no road-going two-stroke Yamaha at all in the U.S. this year, at least not legally. Word is that many frustrated American riders are buying RD350s in Canada and sneaking them back across the border. If you want one, better get it while the supply lasts.

The machine inspiring this clandestine commerce makes the previous ultimate, the RD400 Daytona Special, seem like a slug. The RD350 is a 143 kg missile that produces 47 hp at 8,500 rpm from its 347 cc engine, with a maximum torque of 4.1 kg-m produced at 8,000 rpm. Even with all this power, the engine feels fairly mildly tuned, with a compression ratio of only 6.2:1.

The power comes from porting, from closer tolerances allowed by the water jacket and from the inclusion of reed valves in the intake tract. The six extra horsepower creates more heat than the air-cooled engine ever did, of course, and this is where the water jacket comes in, allowing much more heat to be quickly carried away and dissipated through the radiator. It works so effectively that even after a hard ride you can put your hand on the cylinders momentarily without burning; they're hot, but nothing like an air-cooled engine's.

Piston travel is shorter than in the old engine, too; 54 mm instead of 62. This means that more rpm can be turned without exceeding piston speed limitations. All in all, the engine works like a dream. Not only is it stronger than the old air-cooled engine in maximum power and torque output, but it also has a much wider powerband and can comfortably be ridden around at engine speeds as low as 3,000 rpm.

A coat of flat black paint covering the entire engine and exhaust system further aids heat dissipation. The engine temperature is maintained between 40 and 110 degrees C. while running, and the rider can keep tabs on it by means of a temperature gauge mounted in the tachometer

face. We rode the bike in fairly cool weather, no more than 18 degrees C., and found that no matter how hard or how easily the engine was worked the needle never wavered from a position on the unmarked scale corresponding to about 60 degrees.

The system uses 1,800 cc of an anti-freeze/water mixture. It is moved around by a pump driven from the right end of the crankshaft, in the same location as the oil injector pump. The radiator is mounted on the front down tubes in front of the cylinders, and is cooled only by forced air circulation; there's no fan fitted, and certainly none needed in our experience.

The radiator is surrounded by a plastic shroud, black to match the engine, that might help prevent some damage in the event of a crash. The rad itself is also painted black.

Our test riders all found the appearance of the RD most attractive. The blacked-out engine, rad and exhaust pipes-cum-expansion chambers create a tough-guy, getting down to business look by visually centring the weight of the machine. The paint job, white with crisp dual-tone blue highlight stripes, contrasts sharply with the matt black and seems to indicate a cool, aloof disposition. It looks right for what it is—competent and collected in all situations. The curved-spoke alloy wheels only add a touch of provocative allure to an attractive package.

But if it's pleasant and instructive to look at, the machine comes alive once on the open road in the hands of a sporting rider. The performance of the engine, brakes and suspension are up to the highest standards, and more than bear out the promise of the bike at rest.

In spite of the bike's uncompromising ability as a sporting machine, the RD impresses its rider with its civilized comportment. The engine, capable of blinding bursts of power, is not peaky as you would expect — much less so than the Daytona. Below 5,000 rpm any rider can putter around the city or cruise down a country lane; between 5,000 and 7,000 the 47 horses start to gallop and at 7,000 rpm panic sets in for the inexperienced as the front wheel heads for the sky and the machine leaps forward.

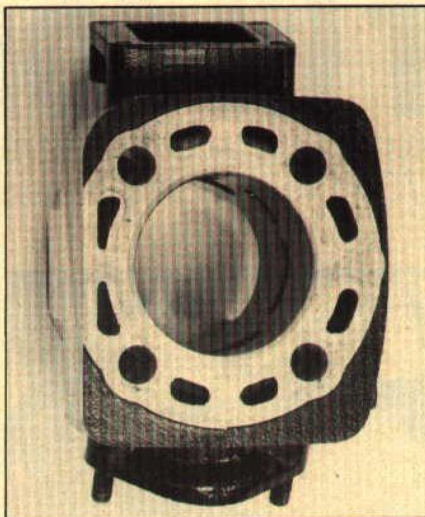
Even during the panic stages of acceleration, you'd never guess what was happening by listening. The air cleaner, water jacket and blank silencers quiet the engine enough to give no hint of the drama the rider is living through.

One thing that isn't changed from the Daytona Special is the RD's propensity to loft the front end. If you're gassing the bike hard, you have to work at it to keep the front wheel near the ground all the way through first and second, and a hard shift to third will find it pointing toward the moon again.

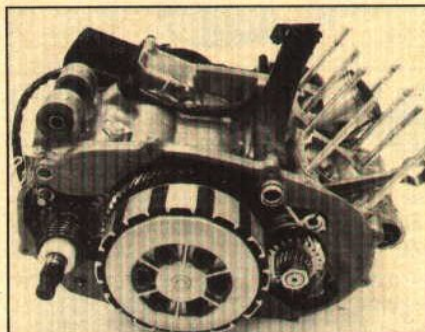
Keeping the engine revving above 7,000 is heaven for the street rider who likes to think he's a road racer. On the other hand,



Narrow handlebar is the perfect match to rear-set pegs and narrow seat.



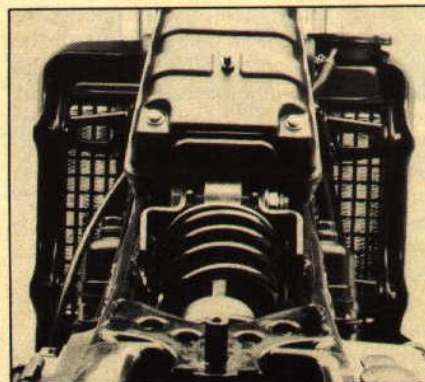
Individual cylinders share a one-piece head. Coolant flows up crankcase.



Gears on crank end drive oil and water pumps. Engine mounts on rubber.



Balance tube connects intake manifolds. Liquid-cooled engine always stays cool.



Air cleaner lives in the plastic box mounted just ahead of the monoshock.

if you're not into white knuckles and bulging eyeballs at every corner, keeping the rpm below the magic mark of 7 on the tach slows things down enough that the trip becomes much more relaxing.

One thing that makes it easy to keep the engine on the boil is the gearbox, which is perhaps the best one Yamaha provides on its street bikes. The six gears are staged well to match the RD's power. Short overall gearing, for a maximum of 169 km/h at redline in top, makes maximum use of the bike's accelerative power. The light, precise clutch has a wide engagement span and is easy to control, which is just as well considering how fast the front end gets light in the lower gears.

You can feel extremely safe on the RD no matter how fast you're travelling or how twisty the road, because the brakes are superb. There are two discs of 267 mm diameter up front, and hauling on the lever with only two fingers has much the same effect as running into a giant feather pillow. The bike stops right now. It's possible to lock the front end at triple-figure speeds if you try; a front tire better able to transmit the deceleration available from the brakes would be a good investment for a rider who planned to use the brakes hard.

The rear drum brake works well in concert with the front. The overkill at the steering end of the bike means that very little brake is needed at the rear, and the drum seems to be set up well to account for this. One nice touch is that the downward-sloping pedal is adjustable for various sizes of foot, so it's quite easy to get it in the most comfortable position.

Using the front brake alone can be great fun if you have the skill and the nerve to attempt doing brakes—stopping on the front wheel with the rear hovering in the air. It's easy if you have a precise feel, but a little too much brake and you'll lock up the tire with dire results. Don't try it unless you're sure of what you're doing.

The rear end is suspended by Yamaha's famous monocross system. It utilizes a triangular swingarm and a massive pressurized shock absorber that feeds suspension loads up the main backbone of the frame toward the steering head. It is adjustable five ways for preload by turning a notched collar. No damping adjustment is provided, and we didn't miss it.

The same is true at the front; 32 mm fork tubes carry coil springs and use oil damping, without adjustment for air pressure or damping rate. As with the 550 Seca tested in the March issue, we found the stock damping and spring rates to be good enough that the lack of adjustability wasn't a problem.

One rider thought that air caps on the fork tubes would be a good idea to minimize front end dive during the heavy braking the RD is capable of. Still, the bike doesn't nosedive the way the RD400s did and other riders didn't think it was a prob-

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Crisp, clean paint-work
contrasts with tough-guy black engine.

YAMAHA RD350

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lem. The improvement in ground clearance that stiffer springing toward the end of the fork's travel would provide wouldn't be of any practical use except on a race track.

The RD just loves to turn. A short wheelbase of 1,365 mm and steep head angle of 27.1 degrees combine with a short trail of 102 mm to make the RD incredibly easy to steer. Somehow Yamaha engineers managed to keep the front end from being oversensitive, so that despite the fast steering it never feels twitchy. The bike seems to balance itself, feel smooth and precise, no matter how ham-handed the pilot may get.

The extremely light weight—and the fact that it's down low—makes transitions from side to side little harder than thinking about them. Changing lines in the middle of a corner is easy, as is braking. The chassis is forgiving in the extreme, and many riders will find themselves getting away with stunts that would have them on their tails on other bikes.

While the front end seems to supply comfort almost as much as it does road holding, the rear is a little stiff. It does keep the rear end tracking straight; we found that on most road surfaces the tires stayed stuck to the pavement regardless of how bumpy it was. Riding any great distance would get painful, though, because not only does the monoshock deliver a firm ride, so does the seat. An upholstered park bench is the closest comparison we can think of.

However, the bike is after all not designed to compete with a GS Suzuki for touring comfort. Given the banzai sporting nature of the motorcycle, the excellent seating position and ease of riding provide all the comfort a rider is likely to need or want while he's out getting his daily adrenaline rush.

The seating position is very good indeed, suiting riders of widely varying statures. The low, narrow handlebar and rear-set pegs tilt the rider forward in just the right position for fast riding. Both pedals, for rear brake and gearshift, are adjustable over a narrow range to help each rider find the optimum position.

Once you get comfortable and start exploring the bike's limits, you'll find that the stock Yokohama tires are the weakest link in the chassis. We found that they gripped well, in fact right up until the expansion chamber on the right was drag-

ging and the centrestand tip on the left. But they felt a little twitchy and had absolutely no tread left beyond the contact point for a safety margin.

The front tire especially felt as though it wanted to give up a few times, especially



No matter how radical you get, the RD's handling will pull you through.

when braking and cornering forces were combined. If we owned the bike the first thing we'd do is put on some better-quality tires. Not that the Yokohamas are terrible, but we think that tires fitted to a bike capable of cornering and braking as hard as the RD can should be the best available. The Yokohamas aren't.

We were astounded after the test was over to discover that the little Yamaha's fuel consumption had averaged 16.5 km/L during the test. For the non-metricated, that's 48 miles per Imperial gallon, a figure just behind the 16.9 km/L we achieved with the 550 Seca in last month's issue. Two-strokes are famous for using more gas than four-strokes anyway, and considering the amount of time we had the RD wailing between 7,000 and 9,000 rpm it's incredible that it got the consumption figure it did.

It was equally stingy sipping injector oil. The 1.6 litre reservoir was only half empty after our 830 km test. You could never accuse this RD of being a pig.

Riders used to modern bikes might be nonplussed to find that there's no starter button on the right handlebar end. Kick only, and at that you have to go to all the trouble of folding up the right footpeg so that the starter can swing through its arc. Big deal; it fired first kick nearly every time. When cold it liked to have the enricher lever on the left carb pulled for a minute or so, then was quite happy to idle or pull redline at the rider's command; yet another indication of how civilized the machine is.

The easy starting is aided by an electronic ignition that supplies lots of spark

at any rpm. Two-stroke riders of the past can forget memories of fouled plugs and burned pistons.

Checking on the level of injection oil is easy. Under the right side cover is a translucent plastic container with a screwtop right on it. Unlike the RD400, you don't have to aim a stream of oil at a tiny hole right in the middle of the chassis, but can tip directly into the tank.

Right beside the oil tank is another small transparent plastic container. This one is the overflow tank for the radiator. It has a high and low mark scribed on the side, and checking coolant level is just a matter of peering at the plastic and adding liquid as necessary. It's just as well because to get into the rad itself you must first unscrew and remove the plastic shroud to clear the cap.

The air filter lives up under the gas tank in a breadbox-shaped plastic container. It's an oiled-foam element that should last a long time between cleanings. One benefit to having it tucked up under the tank is that the tank can then act as a further muffler of intake noise, helping to keep the bike as quiet as it is.

Access is simple enough; pull the gas lines off the tank and remove one bolt and the tank lifts right off. It doesn't take much longer to do than to tell about it, so we don't think having the element tucked away is any impediment to easy service.

Parked right behind the gas tank bolt, under the seat, is a small plastic tray that can be used to carry loose change, a pair of gloves or all the speeding tickets you'll collect while riding. It lifts out, giving access to the preload adjustment on the monoshock. There's a tool provided, a simple hook wrench, that fits down inside and pulls on the adjuster collar. Better wear heavy gloves when you're doing it, because the wrench isn't very long and there isn't much room to work. You can almost guarantee skinned knuckles, a free flow of blood and a freer flow of curse words if you try it with bare hands.

The tools live in the usual plastic pouch and are secured by a rubber strap inside the tail section behind the seat. They are satisfactory but not outstanding. It probably matters less with this bike than many, since most who'll buy one will be enthusiasts who have a good tool kit of their own. Still, Suzuki is providing excellent quality tools with their 1981 bikes, and it'd be good to see the same from other manufacturers.

The seat isn't hinged, sadly. It's one of

YAMAHA RD350

those damnable contraptions that clips under a metal and plastic ridge at the front and then requires that you line up hooks on each side at the rear before applying equal pressure to each side to engage the hooks in the locking clips. You'll soon learn not remove the seat unless you absolutely have to; it's infuriating trying to get the thing back down securely in place.

You'll forget the hassle the second you get it back on and start riding again, though, because the little RD overwhelms you with good feelings almost instantly. As you wheelie off into the distance, you'll decide once again that speed limits are for others; than any machine that can go so fast so quickly and in such perfect safety is worthy of any amount of minor hassling.

Even while sedately riding out to your favorite piece of twisty road you'll find much to please you. The light controls, the virtual absence of vibration—the engine mounts use rubber doughnuts to help soak up the engine's shakes—and the light, responsive nature of the beast all make riding the RD a visceral delight.

You're likely to find that every time you head off to the corner store to buy a pack of cigarettes or a magazine you'll spend three hours tearing around the hills, giggling to yourself all the while as you gobble up 750s and 1,000s that are foolish enough to get in your way.

Yes, the RD350 was worth the wait. The engine performance, the handling ability,

the brakes, the mystique and the fuel consumption that gives you 272 km of fun per tankful all make the bike worth the wait, and more than worth the purchase price of \$2,599.

It without doubt again sets the two-stroke lightweight up as the target for all four-stroke sport bikes, and recalls the halcyon days of the early Seventies when TZ350s would humble everyone else's 750 cc racers even at high-speed tracks such as Daytona.

And speaking of which, one last touch. The cylinders from a TZ250 or half a TZ750 bolt right on to the RD cases, in case you prefer 60-plus hp to 47. What more could you ask? □

The RD's responsiveness makes side-to-side transitions as easy as thinking about them.

SPECIFICATIONS Yamaha RD350H

MODEL 1981 Yamaha RD350H
TEST DISTANCE 830 km
PRICE \$2,599

ENGINE

TYPE Two-cylinder two-stroke with reed valve induction
DISPLACEMENT 347 cc
BORE AND STROKE 64 x 54 mm
COMPRESSION RATIO 6.2:1
HORSEPOWER 47 at 8,500 rpm (claimed)
TORQUE 4.1 kg-m at 8,000 rpm (claimed)
CARBURETION Two Mikuni VM26
STARTER Kick only
OIL CAPACITY ... 1.6 litre injector oil tank, 1.5 litres transmission lubricant

ELECTRICAL

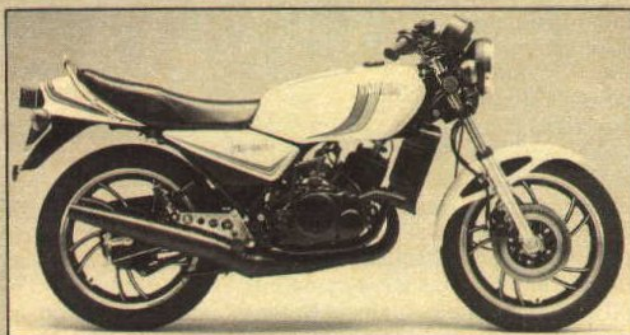
IGNITION TYPE CDI
GENERATOR OUTPUT 150 watts at 5,000 rpm
BATTERY CAPACITY 12 volts, 5.5 amp-hours
HEADLIGHT 60/55 watts

TRANSMISSION

TYPE Six-speed, constant mesh, wet clutch
PRIMARY DRIVE Gear, 2.870:1
INTERNAL RATIOS ... (1) 2.571, (2) 1.778, (3) 1.318,
(4) 1.083, (5) 0.962, (6) 0.889
FINAL DRIVE No. 530 chain, 41/16, 2.563:1

CALCULATED DATA

WEIGHT/POWER RATIO 3.04 kg/hp



SPECIFIC OUTPUT 135 hp/L
PISTON SPEED AT REDLINE 17.1 m/sec at
9,500 rpm
RPM AT 100 KM/H 5,631
MAXIMUM SPEEDS IN GEARS (1) 58, (2) 84,
3) 114, (4) 138, (5) 156, (6) 169 km/h

FUEL

CAPACITY 16.5 litres including reserve
RESERVE CAPACITY 1.5 litres
CONSUMPTION 16.5 km/L (6.06 L/100 km)
RANGE 272 km

CHASSIS

WHEELBASE 1,365 mm
RAKE/TRAIL 27.2 degrees/102 mm
SUSPENSION Telescopic front fork with 32 mm
diameter fork tubes and 140 mm travel, rear
swingarm with monoshock spring/damper
adjustable five ways for preload with 110
mm travel

BRAKES Dual front discs 267 mm diameter, SLS
rear drum 180 mm diameter

TIRES Yokohama 3.00S18 front, 3.50S18 rear
DRY WEIGHT 143 kg
LOAD CAPACITY 175 kg
HANDLEBAR WIDTH 700 mm
SEAT HEIGHT 760 mm (with 61 kg rider)
GROUND CLEARANCE... 145 mm (with 61 kg rider)

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