

**TESTS:** Laverda RGS 1000,  
Yamaha RZ350, Honda CR250R

DECEMBER 1983 \$1.50

**Saddlebag  
Buyer's Guide**

# Laverda RGS 1000

Italian Supersport

**SNEAK  
PREVIEW:**  
Three '84 Yamahas

# CYCLE GUIDE





# GUIDE LINES

*Cycle Guide's Monthly Chronicle of Scoops, Tips, Rumors and Hard Facts*

BY JOE KRESS

## COMING SOON

• The two-stroke streetbike is back, and we have California's bureaucrats to thank for it. Yamaha's potent RZ350LC is now U.S.-legal and soon will be in American dealerships—but only in 49 states. The two-stroke RZ, this year with Kenny Roberts'-racebike graphics, still is illegal in California, though, which is ironic because it was the action of that state's Air Resources Board that led to the RZ coming into the U.S. at all.

Earlier this year, California announced its intention to tighten state emissions-regulations for motorcycles. So, in order to sell motorcycles in California, manufacturers suddenly were faced with the prospect of having to drastically reduce the bikes' emissions. And the most feasible way to meet the proposed regulations, it seemed, was to mount catalytic converters on the motorcycles.

Yamaha went a bit further than that, though. The firm reasoned that if catalytic converters were going to be necessary, why not put them on a bike that had *real* emissions problems, clean it up, and thus be able to bring into this country one of the most sought-after streetbikes of the last few years: the two-stroke RZ350LC.

And that's exactly what has happened. Even with converters, which are neatly tucked into the exhaust pipes, the power-valve-equipped RZ puts out a claimed 59 horsepower at 9000 rpm, and is 49-state legal. And with a Grand Prix-inspired frame to back up its racer-like engine and bodywork, the RZ350LC promises to be one powerful street package, indeed. For the last few years, the midsize sportbike crown has rested on the heads of 550cc four-stroke riders, but Yamaha has just served notice: Those guys had better watch out—the two-stroke is back in town.

• And the midsize-sportbike battle isn't the only front Yamaha will be fighting on in '84. The current contenders in the liter-plus field now have a serious Yamaha entry to deal with: the FJ1100. This super-sport 1100, powered by a new 16-valve, twin-cam, transverse four-cylinder engine, also has a state-of-the-art chassis, featuring square-tube construction, 16-inch wheels front and rear, chain final-drive and an anti-dive fork. Triple-disc brakes and a Monocross single-shock rear suspension also are parts of this package, which comes wrapped in an endurance-racer-



**Yamaha has done what many thought impossible: It brought back the two-stroke**  
*Catalytic converters make the RZ350LC 49-state legal.*



**Yamaha's new FJ1100 will get serious consideration in The Battle of '84**  
*The liter-plus sportbike class just got one more contender.*

inspired fairing, complete with a lower cowl. Liter-plus power, a racebike-like chassis and extensive use of aluminum and magnesium for weight savings attest that Yamaha finally has jumped into the big-bore-sportbike battle with both wheels.

• And the tuning fork company has shown how it intends to cope with the new ITC tariff

rules, too. Bikes with engines displacing less than 700cc are exempt from the recently increased motorcycle-import duty, so there were sure to be a few new models that slip in just under that limit. Here's the first, though: the XV700 Virago—based on last year's XV750 Virago—right at 699cc. But the displacement drop isn't the only thing new about

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## **RIDING IMPRESSION:**

# **Yamaha RZ350**

*For street, for racing, but not for America—yet.*

**T**raditionally, Yamaha has reserved the letter “Z” exclusively for its over-the-counter racing bikes. YZs do it in the dirt, while TZs take their turns on the asphalt. Yamaha maintains the attitude

that if it's a racer you want, you'll get it, prominently marked with a “Z.” That letter designation is uncompromised—that is, unless you're talking about RDs. RDs, you see, are streetbikes, but

streetbikes that, by virtue of their extensive use in F2 and club racing, occupy a gray area between full-on racers and street-only machines.

Despite the RD's widespread racetrack use, though, Yamaha's position on the little two-stroke has always remained the same: It's a streetbike, nothing else. And so, since 1973, RD Yamahas have remained, well, RD Yamahas. That's finally changed, though, because the latest model—the second-generation RD350L/C—is called the RZ350. And the RZ350 is like no other RD-based Yamaha: It looks—and behaves—much like a genuine roadracer.

In short, the RZ350 is closer to be-

**BY DAIN GINGERELLI**





ing a racer than any RD-series model ever was, closer, even, than most RD-fans thought an RD-based bike *could* be. That closeness comes in the form of roadrace techno-trickery remarkably similar to that found on Yamaha's over-the-counter GP bike, the TZ250. The similarities between RZ and TZ include a low-boy, wide-line frame with Monocross rising-rate suspension; a liquid-cooled engine that uses Yamaha's Power Valve System; and bodywork that resembles the armor found on the TZ. And while the RZ's 347cc engine is based on the previous RD350L/C design, some of its pieces—including cylinders and heads—are similar to the TZ250's.

That being the case, you could reasonably assume that the RZ and TZ would produce similar horsepower outputs. You wouldn't be wrong; while there's still a



horsepower difference between absolute racer and absolutely the best two-stroke repliracer ever built, the difference is not as great as you might expect. Yamaha claims 59 brake horsepower for the TZ350, while the TZ roadracer pumps out about 65 in stock form. Since the RD350L/C produced only a claimed 47 horsepower, the RZ is charting waters no other RD-based bike has ever seen.

A 12-horsepower gain over the RD350L/C is only part of the good news. Gone is the toggle-switch power delivery of the L/C, thanks to the way the Yamaha Power Valve System (YPVS) broadens the powerband at the lower end of the RZ's 9300-rpm range. The result is a quick-revving engine—a familiar RD trait—but one with tractability like a four-stroke, making the RZ the most streetworthy RD-based Yamaha ever.

Finding that goodness on American streets could prove somewhat difficult, though, since this red, white and blue missile is sold only in Europe, Canada, Australia and, of course, Japan. But an evaluation of the best two-stroke repliracer was too compelling to resist, so we didn't even try to resist it; we obtained a privately owned RZ350 for a riding impression. Our test bike surfaced in the form of a fresh-from-the-crate RZ owned by Randy Swenson, a Canadian rider who spared no effort in pointing out to us that two-strokes in Canada are as plentiful as flannel shirts.

Our test with the RZ involved several hundred miles of street riding, as well as a full track session at Willow Springs Raceway, our ultimate test laboratory for evaluating bikes such as the RZ350. That

track time was important, since everything about the RZ screams to be turned loose on a racetrack. From its bullet-nose fairing to the upswept, street-legal expansion chamber exhausts, the RZ leaves little room for doubt about its intended role in life. This is no mere hollow shell of a repliracer; the RZ's liquid-cooled engine and Monocross rear suspension clearly are the results of Yamaha's race-track experience with the TZ. That heritage is even evident in the RZ's instrument cluster—a 10,000-rpm tachometer holds center stage on the fairing-mounted dashboard, flanked by a smaller-diameter water-temperature gauge and 140-mph speedometer.

Indeed, everything about the RZ says performance, save for its OEM Yokohama tires, the same low-performance rubber that was on the RD350L/C we tested in the December 1980 issue of *Cycle Guide*. Our experience showed that these tires fell short of the L/C's capabilities, and were the greatest limiting factor in the L/C's competence at speed. So we wasted no time in replacing the Yokohamas with what racetrack experience with RD-based bikes had shown would work the best: a Michelin S41-series 3.25-18 on the front (in the softest compound available, FV11), and a Pirelli Gordon 4.10-18 for the rear. Tire pressure was 32 psi at each end.

Only a few laps were required to dial-in the suspension, in part because the RZ was working flawlessly, and in part because there are only two suspension adjustments: fork air pressure and rear spring preload. The remote preload adjuster is tucked inside the right sidecover,

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and connects via a Gilmer belt to the preload cam atop the RZ's single shock. We found that with a 150-pound rider, the bike handled best with preload on the fourth-highest of five settings, and fork air pressure at 15 psi, well within the recommended 5-to-17.5-psi range.

With good tires and the suspension sorted out, the RZ clearly delivers on its visual promise of roadraciness. The 325-pound bike wouldn't wiggle through any of Willow Springs' nine turns. Even Turn Eight, a fast righthand sweeper pock-marked with bumps, could be taken flat-out in top gear. The RZ didn't chatter or alter course through the fourth-gear Turn Nine dip, nor did the rear tire want to break loose on the uphill Turn Two sweeper, a fast, 180-degree bend in the

track that bottoms the suspension of twin-shock RDs.

And in typical RD-tradition, the RZ heads for the apex of a turn almost as if the bike had been preprogrammed for the course. Thanks to the RZ's quick steering, there's no need for body english to direct the bike to the apex, either. In fact, the RZ is so nimble that it's easy to inadvertently turn *too* sharply until you become acclimated to the quick handling.

Our track session told us another thing, too: The RZ350 is geared too high for the 2.5-mile course. The RZ has a 17-tooth countershaft sprocket, while the L/C had only a 16 (both have 39-tooth rear sprockets). The RZ couldn't reach its 9300-rpm redline in top gear at Willow, even on the downhill back straight. In

comparison, the L/C pegged its tachometer in top gear on both the front and back straights, fully utilizing its power.

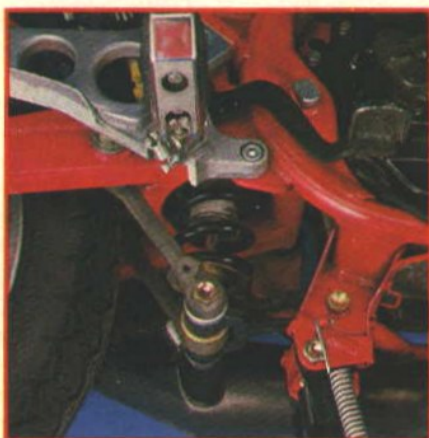
While the RZ's tall gearing might be ideal for a flat-out run on a German autobahn, allowing the bike to maintain a high speed with the engine seemingly loafing, it certainly didn't help our lap times at Willow. The best lap turned was 1:45.5-seconds. With lower gearing, the RZ would easily be good for 1:43s. The 1981 L/C produced 1:45s, and our Project Boss Stock BD400F of 1979 (equipped with Dunlop R-compound K81 tires and S&W shocks) lapped Willow at 1:46.1 during a club race.

While the joy of the RZ is riding it hard, especially on a racetrack, its beauty is the engine. Like practically every other



**Radiator is dressed with a shovel fairing**

*A matter of function with form.*



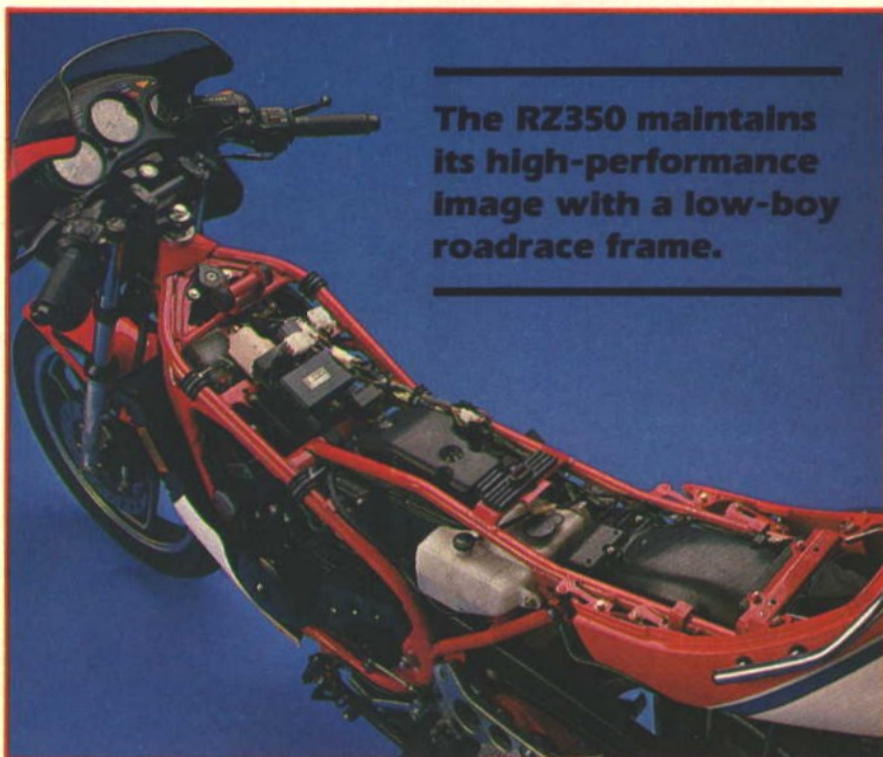
**Mono-X shock absorber mounts low**

*The RZ's link to the TZ-world.*



**Power Valve cable mechanism**

*Pushing and pulling for more power.*



**The RZ350 maintains its high-performance image with a low-boy roadrace frame.**



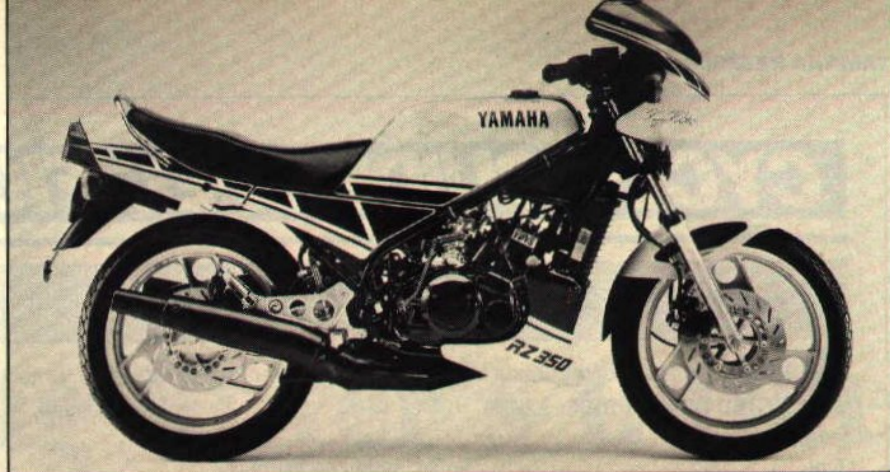


350cc two-stroke from Yamaha, the internal cylinder dimensions remain 64mm x 54mm. But the liquid-cooled twin has been revamped from its immediate predecessor with the addition of separate cylinders (rather than the one-piece block) and, more importantly, the Yamaha Power Valve System.

On the RZ, the Power Valve System serves the same purpose it has on recent YZs and TZs: to broaden the powerband by varying exhaust-port timing according to engine rpm. And even the execution of the system inside the engine is the same on all other Z-bikes. In each of the RZ's exhaust ports, just above the upper edge of the exhaust-port window, is the power valve, a waisted cylinder with a cutaway on one side that runs the width of the port. The cylinder is rotated slightly according to engine rpm, which repositions the cutaway and so raises or lowers the effective height of the exhaust port.

But while the function of the valves is the same in all YPVS systems, the way in which they're controlled is not. The YZ motocrosser's system is purely mechanical, in that the valve's position is determined by a linkage connected to a centrifugal ball-ramp geared to the crankshaft. On the RZs and TZs, the movement of the power valves is also mechanical, relying on two cables connected to a servo motor under the gas tank—one cable to advance the valve, one to retard it. The difference is that the motor/cable setup is controlled by a microprocessor that reads engine rpm electronically through ignition pulses. On the RZ, the microprocessor positions the power valve to provide the lowest effective port-height with the engine spinning below 3500 rpm. Above that speed, the valve is rotated until the maximum effective port-height is attained at 6500 rpm.

What all this electromechanical mumbo jumbo means is that the RZ's designers were free to tune the engine for optimum power at high rpm without sacrificing the usual amount of lower-rpm



power in the process. Because even though engine tuning entails more than just exhaust-port dimensions, being able to vary exhaust-port height according to engine speed can result in more power at both extremes of the rpm-scale. Even the RD350L/C, despite its absence of power valves, could have been tuned to produce either just as much top-end or bottom-end power as the RZ—but not both.

The resultant wide powerband is especially apparent when accelerating the RZ slowly from a stop. For not only will the engine pull more strongly than that of any RD350/400 just off idle, but less clutch-slippage is needed as well.

Yet, despite having more low-end power than previous Yamaha two-stroke streetbikes, the RZ needs lower final-drive gearing just as much for the street as it does for the track. The initial four gears serve well for commuter riding, but the upper two are less useful, with fifth serving as an overdrive, and sixth as an *overdose*; the RZ's engine just can't pull top gear at speeds below 65 mph.

Gearing even hampers the RZ350 at the dragstrip. Like most small-bore streetbikes, the RZ requires considerable clutch-slippage to obtain the best launch—too much slippage, in fact. Because every time the clutch was released at a reasonable distance down the strip, the engine bogged momentarily, power valves or no. Despite that limitation, the RZ still bettered the RD350/LC's quar-

ter-mile times by almost one-half second. Had we ridden the clutch really hard, the RZ could have produced even better times, but the bike wasn't ours—and it is a long way to Canada for spare parts.

But let's keep things in perspective, here. The RZ350 is not and was never intended to be a dragracer; and although Yamaha clearly sought to establish a new standard of performance in production road racing with the RZ, the machine is a streetbike first and a racer second. And as a street-going sport motorcycle, the RZ350 not only eclipses the RD350L/C, it makes all other RD Yamahas seem like refugees from a vintage-bike race.

Now, all that praise might seem a bit like salt applied liberally to an open wound. After all, this RZ is not a U.S. model, and you can't simply drop into any Yamaha dealership and ride out on a red, white and blue wrist-rocket like this one. But from where we sit, this RZ doesn't have even the slightest taste of sour grapes about it. Because soon—very soon—Yamaha dealers will be showing an RZ350 you *can* lay your hands on (see Guide Lines, page 31), a yellow-and-black two-stroke rocket that, like the RZ we tested, produces a claimed 59 horsepower. And if you want to consider that '84 RZ your very own personal GP bike, go right ahead. After all, like Yamaha's other over-the-counter racers, this 350 carries the "Z" designation—and deserves it.

## COMPARATIVE TEST DATA:

| Make and Model        | Quarter-Mile, sec/mph | Top Speed, mph | Weight, lbs. | Stopping Distance From 60 mph, ft. |
|-----------------------|-----------------------|----------------|--------------|------------------------------------|
| Yamaha RZ350LC-'83    | 13.343/98.46          | 112            | 346          | N/A                                |
| Honda VF400F-'83      | 13.588/96.35          | 112            | 402          | 127                                |
| Suzuki GS450E-'83     | 14.236/93.16          | 106†           | 384          | 131                                |
| Honda CBX400-'82      | 13.588/96.46          | 110            | 402          | 128                                |
| Yamaha XS400 Seca-'82 | 14.589/89.28          | 110†           | 382          | 140                                |
| Yamaha RD350LC-'80    | 13.78/79.57           | 113†           | 328          | 126                                |

† indicates a calculated top speed

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