

Yamaha RZ350

1984-1985



Courtesy, Yamaha Motor Corp., USA

by Moshe K. Levy

Introduced in 1984, the RZ350 represented the ultimate evolution of Yamaha two-stroke street bikes in America. Unfortunately, ever-tightening EPA regulations doomed this popular little pocket rocket after an all-too-brief, two-year production run.

IT IS A minor moto-travesty that today's younger generation of motorcyclists can't experience the unique thrills of riding a powerful two-stroke road bike. Due to ever more stringent emissions standards, two-strokes were largely exiled from the American marketplace by 1980—save for one great resurgence in 1984, when Yamaha unleashed its surprisingly capable RZ350 into the anxiously awaiting hands of wannabe club racers across the US. The RZ represents one of the more serious post-1980 attempts by a major manufacturer to bring two-stroke motorcycles back into viability in the US, and it had many technologically advanced features to help achieve this.

The RZ's genealogy dates back through Yamaha's enviable heritage of sporting two-stroke twins, namely the infamous RD350 of the early 1970s, which eventually evolved into the RD400 Daytona Special by the late 1970s. The RZ shares many of the same characteristics with its predecessors, including the lightweight packaging and oil-injected two-stroke twin-cylinder engine. As a more aggressive EPA clamped down on excessive pollution in the interim between the late 1970s and the mid 1980s, the RZ served as the manifestation of Yamaha's philosophy that two-strokes and unpolluted air were not necessarily mutually exclusive entities.

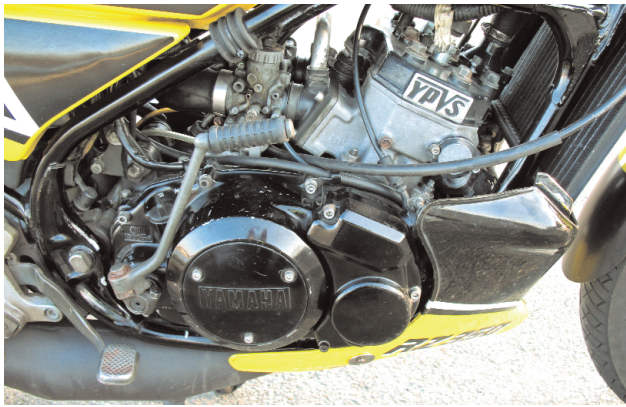
The RZ's kick-start, liquid-cooled motor is actually 347cc, with a bore of 64.0 mm and a stroke of 54.0 mm. Two 26mm slide-valve Mikunis supply the air and fuel mixture to large reed valves mounted on the cylinders, with a small metal pipe balancing the two intake tracts between the carbs and reed valves. Yamaha's Autolube oil injection system ensures automatic lubrication of engine internals, so there's no need to manually mix oil with the fuel. The stock motor could punch out around 40 hp on the dyno, at almost 9000 rpm!

But looking deeper into the powertrain, one begins to see where Yamaha spent some serious R&D resources to comply

with EPA emissions regulations. For example, the RZ is equipped with the Yamaha Power Valve System (YPVS), a microprocessor-controlled, variable-height exhaust port in each cylinder. On two-strokes, higher exhaust ports typically result in more high-rpm power at the expense of lower-rpm performance, while lower exhaust ports have the opposite effect. With YPVS, Yamaha was able to vary the RZ's state of tune electronically, with US-spec power valves starting to open at 5500 rpm and wide open at the 9500 rpm redline—pretty high-tech stuff for its day! Next, the



The RZ350 has achieved cult status, but clean, well-maintained examples, such as this RZ owned by Dave Carvin, are not uncommon.



The RZ's reed-valve 2-stroke uses YPVS, a variable exhaust port, to control its potent hit. Some engine parts are still available, as Yamaha also used the motor in its Banshee ATVs.

mufflers themselves were marvels of the budding catalytic converter technology of the time. On the greenest models—those destined for sale in California—each of the RZ's two mufflers weighed over 26 lbs., chock full of platinum-coated catalyst screening hardware, electronic probes and reed-valve controlled air-injection portals. Yamaha claimed a full 10% of the RZ's production costs were in the mufflers alone! The catalytic converter itself could climb to 1650° F in normal use. However, the result of these systems was the cleanest two-stroke engine the EPA had ever tested.

The rest of the chassis and driveline was conventional by comparison, but extremely effective nonetheless. The “low-boy” tubular steel frame has a short wheelbase of only 54.5" and its rake/trail figures of 26°/3.8" were designed to provide the sort of razor-sharp handling perfectly suited to a lightweight replicacer. Front forks are standard damper-rod style 35mm telescopic units, with air caps as their only means of adjustment. The rear suspension consists of a rising rate monocross-style shock, adjustable only for spring preload.

A wet multi-plate clutch feeds the RZ's close-ratio, 6-speed transmission, with final drive via 520 chain. The RZ's 18" cast alloy wheels were shod with sticky Dunlop rubber, while its brakes consisted of opposed-two-piston calipers on three 280mm inch discs (two front, one rear).

With a wet weight of around 375 lbs., the RZ's lightning-fast steering and stable chassis made for a truly enjoyable track machine. Racers used to high-compression four-stroke motors would have to get used to the two-stroke's almost total lack of engine braking and learn to rely more on the brakes, but once mastered, the RZ was seriously quick through the apexes. Quarter-mile times of around 13 seconds flat were more a result of tall gearing than anything else, as the spunky ring-ding could pull all the way to 115mph and beyond when run flat out. All the while, the rider was treated to the inimitable intake honking and high-pitched exhaust yowl of a two-stroke twin screaming at high rpm, something sadly missing from today's scene.

Aesthetically, the RZ350 was a treat as well. It was available in two color schemes—either Yamaha's international racing red/white/blue, or the more desirable “bumblebee” yellow/white/black (Yamaha officially called it “photo strobe”). Bodywork is typical 1980s crotch rocket, with small head and chin fairings, a café front fender and sleek bodywork sweeping toward the rear. A single-seat cowl was optional for that true racing look. The finishing touch was the signature of racer



Above: “King Kenny” Roberts' signature adorns the RZ's fairing. Right: Most RZ owners ditched the stock, heavy, catalyst-equipped exhausts in favor of expansion chambers by Toomey or Spec II.



extraordinaire “King Kenny” Roberts emblazoned on the fairing, a not-so-subtle reminder of this bike's intended purpose. Built to turn and burn, the major components are tucked in and high, allowing the RZ to be leaned over quite far before anything scrapes the asphalt.

Recently the little RZ has been appreciating in a big way. Examples in good condition are selling for more than \$5000, over twice the original 1984 MSRP. Prospective owners should be on the lookout for the quality of any modifications, which were frequent and not always professionally done. At the time, owners so inclined could free the RZ from the restrictions of its stock EPA-mandated exhaust system, and replace them with lightweight, high performance expansion chamber alternatives. Toomey Racing's kit, one of the most highly rated, could boost RWHP about 25%, while cutting the bike's overall weight by about 10%. As always, modified or previously raced bikes should be checked thoroughly for any issues, but overall, the RZ has proven a reliable and fun companion, and a perfect reminder to today's younger sport-riders who equate two-strokes only with droning 50cc mopeds. 🏍️



RZ350s adorned in Yamaha's red, white and blue international racing paint scheme are a rarer sight, but they're less desirable than the yellow, white and black “King Kenny” colors.