

Yamaha's 2nd-Generation FZ1

Slower but better

by Dave Searle



11,750 (but our dyno indicates the rev limiter hits at 11,500) and the larger combustion chambers now carry valves .5mm bigger: two 25mm exhausts and three 23.5mm intakes. As before, the diminutive valves allow extremely long inspection intervals, 26,600 miles apart, and are said to rarely need adjustment, even then.

Although visually identical to the latest R1, revised cam timing tunes the new motor for stronger mid-range. To enhance its smoothness, crankshaft inertia was increased by 33%, using heavier counterweights that increase the crank's weight by 5.38 lbs.

Mikuni's latest double-butterfly fuel injection, using big 45mm throttle bodies, replaces the old bike's 37mm carburetors. Fuel is delivered to the airstream through high-dynamic-range single fuel injectors in each intact tract. Ignition and fuel are both managed by the latest 32-bit ECU—a breakthrough technology that gives extremely fine combustion control throughout the range.

The exhaust system departs from conventional practice by having the four header pipes connect to a tapered box-like structure under the engine to add volume. A heated O₂ sensor is located at the collector junction and, downstream, a pair of catalyts are on either side of an EXUP backpressure control valve, which is now a simple round butterfly shape. The silencer itself is a short, fat, roughly

D-shaped can capped with an odd, angled end cap that may be the bike's most controversial styling feature. But those who might figure to replace the muffler with an aftermarket item should note that the EXUP and one of the catalyts are part of the silencer unit, and you really don't want to lose the EXUP's torque-enhancing effects.

Peak power is claimed to be up 7 hp, but that's not what our dyno testing found. Only 1.7 hp stronger at peak than the first generation FZ1 was back in 2001, the new motor's mid-range is also weaker from 3400 all the way to 10,000 rpm—*much weaker*—by as much as 20 hp at 7000! Blame the latest emissions regs if you will. Tested performance numbers are also down, despite a weight loss of 18.5 lbs: approximately two-tenths of a second slower to 60 mph, 100 mph and in the quarter-mile. However, the top speeds were a virtual tie: 153.9 then and 153.6 mph now. That said, we still greatly prefer the new injected engine's drivability, as even the installation of a jet kit couldn't give the older FZ1 the same satisfying controllability. And while we have to be disappointed by the drop in power, a 10.74 second quarter-mile is certainly still more than "adequate."

Yamahas of yore had long been criticized for clunky gearboxes and the FZ1 was no exception. It seems the vertically stacked transmission, a concept that Yamaha pioneered (now standard on virtually all new high-performance motors), which enables an extra long swingarm to be fitted without extending the wheelbase, didn't splash-lubricate as effectively as the older horizontal layout. This was cured on last year's R1 by including a separate oil gallery to keep the upper shaft slippery, and the new R1/FZ1 motor's transmission is now nearly as slick as the very best available anywhere. The throw at the shift lever, which had been increased to reduce the higher effort, is now a normal shorter distance, which also helps make shifting intuitively easy. Any gearbox you notice is a bad gearbox, and you don't notice the new FZ1's. It's that good.

The primary, gearbox and final drive ratios were also overhauled to create the new transmission, which is not identical to the R1's (the new FZ1's fifth and sixth gears have taller ratios for more relaxed cruising rpm). Compared to the old FZ1, the new transmission has closer ratios, very evenly spaced, where the older gearbox had big jumps in the first two gears and hardly any difference between fifth and sixth. The result is that the new gearbox gives better choices for corners although it does require considerably more clutch slip for a maximum drag strip-type launch.

To top off the list of powertrain improvements, the clutch, which is still cable operated as before, now has a much improved engagement feel. It had been well below par.

Chassis/Suspension

There was no question that old FZ1's double-cradle, steel tube chassis was heavy, a large part of its 50 lb. weight difference vs. the 2000 R1. But it certainly seemed strong enough and the bike's handling won high marks from testers around the globe. However, this year, in keeping with its racy new focus, the FZ1 gains an aluminum twin-beam chassis. The main engine cradle sections are gravity cast and support the motor at six points while the bolt-on seat-supporting subframe is welded from square-section alloy. There is no longer any support in front of the motor. Not only does the new chassis construction save 19.8 lbs., but the weight savings is also high, where it makes an even bigger difference to the CofG and agility. The big surprise is how much stronger the new chassis is: 470% stiffer vertically, 410% stiffer horizontally and 140% torsionally!

The older FZ1 had an attractive rectangular-section alloy swingarm but this is replaced by a shapely new, 1.77"-longer, Controlled-Fill die-cast aluminum arm with deep sides for better torsional stiffness. Despite the extra length, the wheelbase is only .39" longer as the entire motor is now 35mm (1.38") further forward in the chassis. Weight distribution is nearly reversed by the change. Where the old bike had 48.9/51.1% front/rear static distribution, the new machine is 50.3/49.7% front/rear, almost exactly like the latest R1 for even better dynamic balance than before and a very communicative front end feel.

The old FZ1 had suspension that was very good for its day, Soqui components (a company owned by Yamaha) that were fully adjustable at both ends for preload as well as compression and rebound damping. However, that suspension still kept the aftermarket happy, as stiffer front springs were a popular modification and Racetech Gold Valves would improve high-speed compression damping in particular. At the rear, owners who fitted Öhlins or Penske shocks experienced superior low-speed damping control for enhanced ride quality and better power transfer to the pavement.

This time, Kayaba got the nod to supply the new FZ1, and the forks are again 43mm in diameter, but are now inverted, male-slider units, which typically enhances their stiffness versus conventional types. We were recently very impressed with the Kayaba components on the latest GSX-R1000 Suzuki, and the new FZ1 adds to their reputation, as the bike's suspension does a remarkable job of soaking up weather-beaten pavement while keeping the rider in complete control. We had to almost pinch ourselves to comprehend the difference between the potholes we knew we were hitting and the bike's composed response. Also, unlike the older FZ1, the new machine's high-speed fork damping is excellent, too, so that very hard hits that might otherwise compromise control are handled without sphincter-clenching. The fork's spring rate is 11.6% stiffer, and the wheel travel is slightly less (5.1" vs. 5.5") but the ride quality is superior and the handling quality is much better. The rear travel is also slightly shorter at 5.1" vs. 5.3". We heard a few complaints about the suspension at the bike's introduction, but by simply taking a notch of preload out of the rear shock and adding a click of rebound, it worked beautifully. When you've got adjustable suspension, you should try adjusting it before you complain about it.

To match the new weight distribution and larger rear tire (a 190/50ZR17 vs. the older 180/55), the steering geometry is revised: the rake pulled in a degree to 25° and the trail increased from 4.09" to 4.29". Stability is excellent and the new numbers provide perfectly neutral, light and predictable handling.

Brakes/Wheels

Sumitomo's excellent forged-aluminum, monobloc, four-piston front calipers made the first FZ1 special and they return for 2006, allied to larger-diameter, thinner discs (320mm x 4.5mm vs. 298mm x 5.0mm), just like the latest R1. Although we might have wished for radial-mount calipers, or a radial-pump master cylinder, the performance difference these items offer is very subtle, and the efficiency and feel for traction the FZ1 provides is still excellent. In back, the old FZ1's rear brake was probably too strong, as it locked too easily. The new one wears a smaller rear disc (245mm vs. 267mm) and the caliper is now a single-piston Nissin unit rather than the stronger twin-piston Sumitomo caliper used earlier. The result: good brakes that are even better. Our testing results: five stops, all of one-G or better, with a best of 114.39' from 60 mph.



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Ergonomics/Riding Impression

The original FZ1's riding position was one of its best features. The new FZ1's is even better. Complimenting the engine's movement forward in the chassis, the rider is also positioned further forward: the hips 49mm forward; the seat 5mm lower; the bars 10mm closer to the rider and 25mm lower; and the footrests 27mm further back and 16mm higher. When we read the specs, we frowned at the lower handlebar, but aboard the bike, because it's closer, it feels just right and very comfortable. The new handlebar placement also assists with wind protection, because the shield is closer to the rider, 17mm taller and now has vents at its base to improve its effectiveness. Although the seat-to-pegs distance is tighter than before, footpeg clearance had previously been an issue for very aggressive riding and aftermarket rearsets were a popular modification, so the changes make sense.

The width of the gastank between the rider's legs is also wider, as he's sitting further forward, but where the older FZ1 gastank was too wide at the rear, preventing good leg contact along its length, the new one gives better thigh contact for improved control.

Unfortunately, the whole super-sport makeover has a downside, too. The FZ1's seat now resembles the R1's. Although slightly thicker than the supersport's, it doesn't have near the long-term comfort of the older FZ1's plush saddle. We'd opine that your comfortable riding distance has been cut in half by the new seat, which seems to get thinner the further you go and isn't much wider than an "average" posterior at the back.

Also, because the whole machine now has a hunched forward look compared to its earlier iteration, and the stubby muffler has been made so much fatter to contain the necessary volume in a shorter package, very little room remains for hard luggage. Yamaha will not offer hard bags in the US (they will in Europe, however, so "resourceful owners may be able to acquire the European equipment," similar to the FJR1300's) we were told.

Bottom line: 18.5 lbs. lighter, with better handling, far better drivability, a much slicker transmission, better suspension and even better brakes, the new FZ1 almost immediately becomes a virtually transparent extension of the rider's desires—a big improvement. 🍌

THE ORIGINAL FZ1 was the first naked musclebike to keep the power of its engine donor (the 2000-spec YZF-R1) intact. Our dyno revealed that it made 124.9 rear wheel hp, just 5 less on top than the R1, but with even more mid-range. The motor was hung in a large-diameter steel tube chassis that offered fully adjustable suspension, top-spec brakes, a relaxed upright riding position, a comfortable seat, decent wind protection and even a centerstand. Priced at a reasonable \$8,499, most riders found it also carried a fair insurance classification—reducing ownership costs vs. a plastic-wrapped sportbike. It also proved very durable and reliable, earning real loyalty from buyers around the world.

But as advanced as it once was, the last five years have seen important breakthroughs in technology, and 2006 also signaled new emissions regulations that virtually require major revisions. The toughest standards are the Euro 3, but the '06 EPA rules are also more stringent.

In addition to the logical upgrades—mandated or anticipated—the question of the FZ1's target market philosophy was also given careful consideration. Eventually, it was decided that a new FZ1 would have the greatest appeal if its high-performance orientation was sharpened—made closer to the R1—leaving the FJR1300 to fulfill the sport-touring role, eliminating any showroom confusion. Although some of us might disagree with that decision, Yamaha is convinced that more Americans will want what the new machine offers. And because many of the changes affect the new FZ1 for the better without compromising its traditional strengths, the new machine is still well worth the effort to customize for other roles.

Powertrain

As before, the motor is still the classic five-valve, slant-block design—the essence of Yamaha's "Genesis" engine philosophy, dating back to the '80s. The cylinders are tilted forward at 40° and the intake tract is essentially vertical for the straightest possible shot into the combustion chambers and thus the least power-robbing flow restriction. However, unlike the previous FZ1, which used a side-flow head to gain gastank capacity above the motor, the new bike holds less fuel (4.76 gals. vs. 5.5). Redesigned in 2005, the R1's motor was made more oversquare for greater rev capability and the FZ1 shares that new bore and stroke (77.0 x 53.6mm vs. 74.0 x 58.0mm). The redline is said to be raised to 12,000 from



← Left: The windshield is raised 17mm and now allows airflow on its backside for more effective protection with less buffeting. The forks are attractive inverted Kayaba units that separate the compression and rebound damping function into the left and right sides. Fully adjustable at both ends, the new suspension is a real improvement, once properly adjusted. Larger brake rotors, 320x4.5mm vs. the older 298x5.0mm discs are again mated with excellent Sumitomo forged monobloc calipers for superb braking performance.



↑ Top: The instruments are complete and easy to read and include a fuel gauge and a clock. The redline is claimed to be raised to 12,000, but our dyno indicated that the rev limiter engages at 11,500 rpm.



↓ Below: The handlebars are nearly flat on tall risers, allowing rotation for a comfortable wrist angle. The cable operated clutch lever is a long reach from the bar, but is malleable enough to be bent in slightly for a more comfortable position, after removing the switch gear and using a wooden block as a fulcrum.

➤ Right: The new seat is more sportbike-like to help differentiate the FZ1 from the FJR1300. It's good, but not as good as the old seat for long-term comfort, and while the passenger portion is well shaped, the passenger pegs are fairly high.



← Left: The FZ1's controversial new muffler is the final part of a radically different exhaust construction. In case you imagined replacing it with an aftermarket slip-on, you should know that the silencer section includes one of the two catalytic converters and the EXUP butterfly valve, which you might not want to lose.



TESTERS' LOG

Don't take this wrong, because the FZ1 is still my favorite naked bike, but with the big changes to the chassis and big changes to the engine, I expected more from it. Thanks to the new aluminum chassis, it's a little lighter, and the geometry changes make it a bit more nimble in the twisties, but its range is reduced because of nearly a gallon less fuel capacity. The riding position is improved while at the same time the seat is not as comfortable as the '05. And, it seems that changing the bore and stroke and using fuel injection hasn't really improved the power or even equalled the mid-range of the older bike. Quarter-mile starts now require very high rpm and lots of clutch, otherwise the '06 FZ1 tends to bog down just off the line. The larger front brake rotors and smaller rear brake rotor have improved braking feel and performance. Now shod with a 190 rear tire, there's more than enough rubber on the ground.

Even costing \$500 more than last year's model, the '06 is still one heck of a bargain and continues to offer the latest in fun and function.

—Walt Fulton

As an owner of the previous generation FZ1, I'd really been looking forward to this test. Experience aboard the 2005-model R1 (the engine donor), convinced me that the new FZ1's engine drivability and transmission would be big improvements, but as for the rest, I have to wait and see. Still, I sold my old bike in anticipation, hoping to avoid the depreciation the new model would cause.

Aside from the expected improvements, the handling is even better as a result of its aluminum chassis, lighter weight and new forward weight bias; the suspension is even better; the braking is better balanced by virtue of the smaller rear disc, and the ergonomics and wind protection (a slightly taller windshield with vents at its base) are significant improvements too. However, the new firmer seat limits my comfort range from 300 to perhaps 150 miles. But the big drop in mid-range power is the greatest surprise. Still, my old FZ1 always offered way more power than I needed, and the new fuel-injected bike's drivability is vastly better. Even priced \$500 higher, it's a terrific value and an even nicer ride. Now, if I can just learn to like that new muffler...

—Dave Searle

2006 Yamaha FZ1

SPECIFICATIONS AND PERFORMANCE DATA

ENGINE

Type: ..Liquid-cooled, inline 4-cylinder
Valvetrain:.....DOHC 5-valve, shim-under-bucket valve adjustment
Size:998cc
Bore/stroke:.....77.0mm x 53.6mm
Comp. ratio:11.5:1
Fuel system: ..Mikuni double-butterfly EFI, 45mm throttle bodies
Exhaust:4-1 w/EXUP backpressure control valve

DRIVE TRAIN

Transmission:6-speed
Final drive: .. #530 Daido 50VA8 chain
RPM @ 65 mph*redline 4520/12,000
*actual, not indicated

DIMENSIONS

Wheelbase:57.48"
Rake/trail25.0°/4.29°
Ground clearance:5.1"
Seat height:31.25"
GVWR:904 lbs.
Wet weight:493.5 lbs.
Carrying capacity:410.5 lbs.

SUSPENSION

Front:Kayaba 43mm, male-slider, telescopic fork, adjustable preload, compression and rebound damping 5.1" travel
Rear:Kayaba monoshock w/progressive linkage, adj. for preload, compression and rebound damping 5.1" travel

BRAKES

Front:Dual 320x4.5mm discs with Sumitomo four-piston, double-action calipers
Rear:Single 245x5mm disc with Nissin single-piston caliper

TIRES & WHEELS

Front:120/70ZR17 Michelin Pilot Road on 3.50" x 17" 5-spoke alloy wheel
Rear:190/50ZR17 Michelin Pilot Road on 6.00" x 17" 5-spoke alloy wheel

ELECTRICS

Battery:12V, 11.2AH
Alternator output, max:.....560W
Ignition:TCI with 32-bit ECU
Headlight:Dual 60/55W

FUEL

Tank capacity:4.76 gal.
Fuel grade specified:.....91 octane
High/low/avg. mpg:34.2/40.1/37.4

CycleStats™

PERFORMANCE

Measured top speed153.6 mph
0-1/4 mile10.74 sec.
@123.22 mph
0-60 mph3.23 sec.
0-100 mph6.68 sec.
60-0 mph114.4'
Power to Weight Ratio1:3.90
Speed @ 65 mph indicated61.8

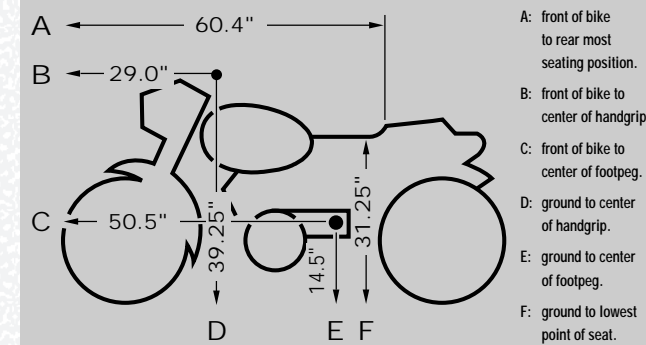
M/C RATING SYSTEM

EXCELLENT
VERY GOOD
GOOD
FAIR
POOR

Category	Rating
Engine	●●●●●
Transmission	●●●●○
Suspension	●●●●●
Brakes	●●●●●
Handling	●●●●●
Styling	●●●●○
Riding Impression	●●●●●
Instruments/Controls	●●●●○
Attention to Detail	●●●●○
Value	●●●●●
OVERALL RATING	●●●●●



ERGONOMICS TEMPLATE

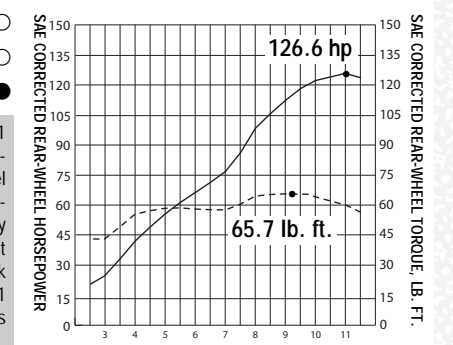


DYNAMOMETER DATA

Instruments:Digital speedo, analog tach, odometer (km/mile), trip, reserve trip., clock, fuel level, coolant temp./air intake (ambient) temp.,
Indicators: Turnsignals, neutral, high beam, oil pressure, coolant temp., engine trouble
MSRP:\$9099
Routine service interval: 4000 miles or 6 months
Valve adj. interval:.....26,600 mi.
Warranty:12 mos., unlimited miles
Colors:Shift Red, Liquid Silver

Low end ●●●●○
Mid-range ●●●●○
Top end ●●●●●

The 2nd generation FZ1 motor benefits tremendously from the latest fuel injection and engine management, delivering vastly superior drivability. But it makes no more peak power than the 2001 model and noticeably less midrange...curious.



TEST NOTES

PICKS

- Latest R1 motor gives wonderful drivability
- Kayaba suspension is superb with proper adjustment
- Excellent handling together with relaxed ergonomics

PANS

- Supersport-style seating reduces long-term comfort
- Less adaptability to a sport-touring configuration
- Loss of mid-range power, probably to emissions regs

STANDARD MAINTENANCE

Item	Time	Parts	Labor
Oil & Filter	0.3	\$23.55	\$18.00
Air Filter	0.5	\$34.93	\$30.00
Valve Adjust	3.5	\$61.50	\$210.00
Battery Access	0.2	MF	\$12.00
Final Drive	0.3		\$18.00
R/R Rear Whl.	0.5		\$30.00
Change Plugs	0.5	\$37.52	\$30.00
Synch EFI	1.0		\$60.00
Totals	6.8	\$157.50	\$408.00

Note: MCN Labor rate are best guess estimates at this time