

# KAWASAKI KZ750

## Technology Catches Up To The Vertical Twin (With Surprising Results)

■ In this age of bigger and faster motorcycles with more and more cylinders and valves and carburetors, there remains a market for traditionally-sized twin cylinder bikes. The subject of this test—the double-overhead-cam, balancer-equipped vertical-twin four-stroke KZ750—is Kawasaki's fourth largest seller in spite of its relatively recent introduction in 1976. Every KZ750 made has been sold.

Some advantages offered by a traditional Twin are obvious: two spark plugs cost less than four or six; four valves are easier to adjust than eight or 24; two carburetors require less time to synchronize than four or six; two cylinders are narrower than four or six, and gulp less gasoline as well; and Twins, with fewer moving parts, generally weigh and cost less than equal-displacement multis. Another advantage is less obvious: Twins wear out tires and chains less frequently than multis, an advantage tied to a disadvantage—Twins usually make less horsepower than equally-sized multis.

In many ways, the KZ750 fits the stereotype of a Twin when compared to multis. But with dual overhead cams, replaceable-shim valve adjustment and twin balancer shafts, the KZ750 engine is far re-

moved from the simple, pushrod British powerplants that first made 650 and 750-class vertical Twins popular decades ago. It's even more complicated than the 1970 vintage Yamaha XS650, which has a single overhead cam, adjustable valve tappets and no balancers. The question is, has the extra technology improved the breed?

In terms of speed, no. The KZ750 charges down the dragstrip in 14.12 seconds versus 13.86 seconds for the 1978 Triumph Bonneville 750. (It should be noted that the Bonneville requires premium gasoline and delivers about 10 fewer miles per gallon.) For comparison, the Kawasaki KZ650 Four does the standing-start quarter in 13.19 seconds; the Suzuki GS750 Four in 12.83 seconds.

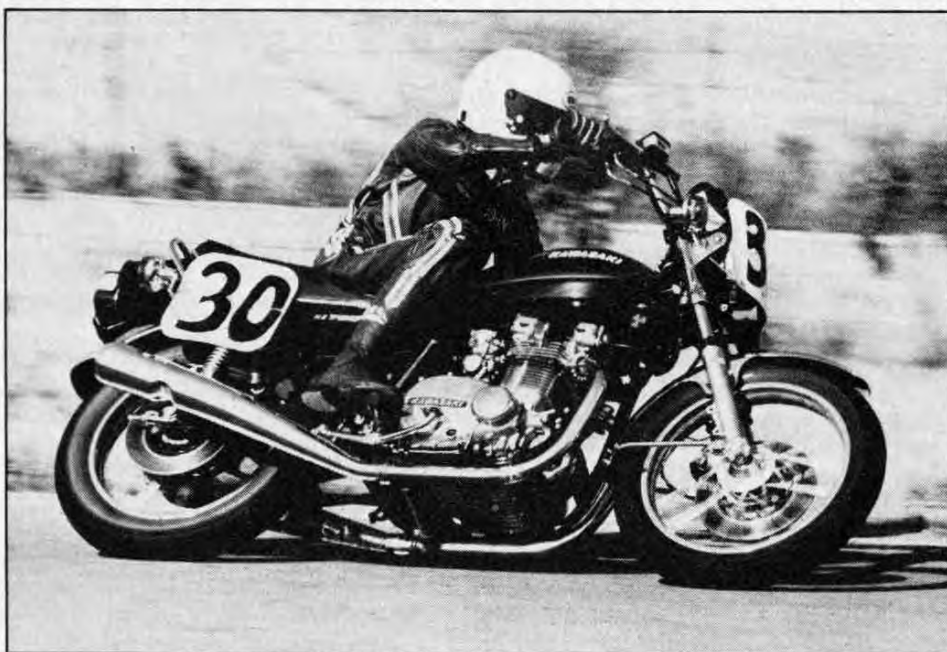
One thing the modern touches do add is weight—at 506 lbs the KZ750 weighs 81 pounds more than the Bonneville (425 lbs) and 13 pounds more than the standard KZ650 Four (493 lbs). Another result of the technology is that maintenance is more complicated. The shim-and-bucket valve adjustment system has proven reliable in years of use in Kawasaki, Suzuki and Yamaha engines, and often requires attention at less frequent intervals than a traditional adjustable tappet design. But when adjustment is called for, a set of assorted-size shims and a special bucket-depressing tool are needed. However, with one set of contact points, the bike's timing is easier to adjust than that of the Bonneville, the

Yamaha XS650 and some multis, excepting certain Yamaha and Honda models with pointless, electronic ignition systems.

Some equate double overhead camshafts with very high rpm and a cammy powerband. Yet the KZ750 engine delivers excellent low and mid-range torque, just as tradition says a Twin should. Tradition also has it that vertical Twins vibrate. In spite of two counter-weighted balancer shafts driven off the crankshaft, the KZ750 engine still shakes, but not nearly as much as the Bonneville. Certain Twin fanciers hold dear the idea that the low intensity reciprocation of a Twin is less bothersome than the higher-pitched massage of a Triple or in-line Four. Different people view vibration differently, and some may even enjoy what others cannot tolerate. Be that as it may, no one could call the KZ750 smooth or its periodic motion pleasant. It may be that the balancers do more to change the character of the vibration in certain rpm ranges than to subdue it, but even rubber-mounted handlebars can't always isolate the rearview mirrors and the rider's hands from the pulsing. Hard rubber grips don't do anything to improve the rider's comfort.

Below 4000 rpm, the shaking isn't bad. It's easy to cruise around town and cut through traffic without exceeding that engine speed. The bike will shoot away from a stop at 1500–2000 rpm and cruise at 45 mph in fifth gear (2800 rpm) without complaint. At that speed, the left mirror is perfectly clear, the right mirror almost clear, and the overall vibration level almost nil. The engine is perfectly content to operate between 3000 and 3500 rpm as the rider shifts up through the gears, without jerking or detonating, and the mellow elongated exhaust note at those engine speeds sounds neat. The KZ750 has little drive line snatch when the chain is properly adjusted, so it's possible to run the engine at low rpm without lurching. The KZ750's constant-velocity carburetors react more progressively to small twist grip movements than the constant-velocity carbs used on some bikes, avoiding lurch-inducing overreactions. The KZ750's carburetor return springs do their job, yet don't require enough force at the twist grip to tire the rider's right wrist or shoulder.

Ridden around town at less than 4000 rpm, then, the KZ750 is fine, an enjoyable mount. But head up an expressway on-ramp, grab a handful and *feel* the commotion! When the tach needle passes 5000 rpm, the buzzing in the footpegs, bars and



The only safe place to go fast on a street bike is the racetrack. Entering the box stock class cost us \$20.

passenger pegs spreads to the seat and gets violent. And by the time the rpm reaches 7000, both mirrors pivot outward on their 1" mounts from the sheer intensity of the vibration. At the 7750 rpm redline, it feels as if the whole machine will shake itself from under the pilot. After the rider kicks the rpm down to about 4200—an

indicated 65 mph—and re-adjusts the mirrors, he realizes that the KZ750 is still chugging down the road, immune to the force of its own redline trembling. It may feel as if high-rpm running will rattle the bike into oblivion, but that doesn't mean it actually will.

At highway speeds, the mirror images

remain slightly blurred and the buzzir continues through the bars, passenger pegs, and—somewhat subdued—the footpeg. It's still far less shaking than experience on a Bonneville. In fact, the KZ750 is the smoothest—if the word applies—large vertical Twin available today. How much vibration is too much vibration is a subjective





tive judgment, and test riders noted that their state of mind at a given moment greatly affected their tolerance. But at least one tester, after riding the KZ750 100 high-speed Interstate miles while suffering a severe sinus attack, staggered back into the office and declared that the KZ750's handlebars had increased to two inches in diameter.

The seat slopes stylishly upward in the rear, and after half an hour on the road, that is more noticeable than the constant, steady, low-level throbbing. The seat sends the rider sliding slowly forward towards the gas tank, bunching up trousers uncomfortably in the crotch.

The front forks and the rear shocks lack the ability to react to concrete pavement expansion joints and other small bumps. Only larger jolts will move the suspension, even when shock spring preload is set at the lowest position.

Once the shock preload is set at the maximum, the bike remains steady even when run hard down twisty roads. Handling and braking are flawless at anything close to sane street speeds. Even the hardest charge through sweeping turns doesn't produce a wobble. Ground clearance is adequate, and only the center stand touches in tighter turns. The single disc brakes at each end are strong and progressive, and the rear disc is one of the most controllable we've ever experienced. The KZ750's rear brake doesn't lock unexpect-

edly at turn entrances or when applied at low speeds.

Fast street riding is a matter of bravery and foolishness—how fast the rider dares go in a hostile environment filled with errant motorists, stop signs, road debris, police, loose dogs and other hazards. The best and safest place to determine a motorcycle's handling characteristics when pushed to the limits is a racetrack. So, we rode the KZ750 out to a Manning Racing club event at Ontario Motor Speedway and entered the box stock class. To pass tech inspection, it was necessary to safety-wire the oil drain plug; remove the mirrors, centerstand and sidestand; disconnect the brake light; and tape the headlight, taillight and turn signal lenses. The bike was raced with unleaded gasoline, which Kawasaki recommends for street use.

Racetracks have a way of making things like vibration and rider comfort unimportant while magnifying the importance of handling and horsepower. The KZ750 delivered few surprises. With a good drive out of the last infield turn and the rider crouched in a mile tuck (left hand holding the left fork tube for decreased wind resistance), the KZ750 would indicate 110 mph at the end of the long straightaway, hopelessly slow for the open box stock class (some clubs break box stock divisions at 675cc to include the KZ650 with 1mm overbore). But at that speed, the KZ750 remained as steady and wobble-free in a

straight line, around the banking and through the wide open infield esses as it was at slower street speeds.

The bike would wobble if the rider unloaded the frame by suddenly backing off the throttle in the middle of a high-speed turn—a maneuver sometimes necessary when trying to pass or lap erratic riders and groups of riders. Pavement bumps in the middle of some flat, sweeping turns at speeds above 80 mph also started minor oscillations, especially at the apex, where the bike was leaned over the farthest.

Production motorcycle frames, swing arm assemblies, forks and wire wheels all have a certain amount of give, or flex. Cornering at high speeds generates forces sufficient to cause those components to load in one direction, generally toward the outside of the turn. Slamming the throttle shut—or hitting a bump that jolts the rear wheel even slightly off the ground—interrupts the driving force and can allow the loaded parts to snap back in the other direction. That starts an oscillation, or wobble. In the KZ750's case, the wobble never got bad enough to endanger the rider.

Cornering speed and lean angle both were limited by the stock Bridgestone tires (Super Speed 21R2 and 21F2). At just about the point where the footpeg would drag on either side, the tires ran out of side tread. When that happened, any attempt



The KZ750 has good controls, hard grips and an easily-thwarted helmet lock.



Instruments are steady and easy to read, but the speedometer is optimistic.



Lifting the locking seat reveals the air cleaner, battery, toolkit and tail-section storage.



# KAWASAKI KZ750

## SPECIFICATIONS

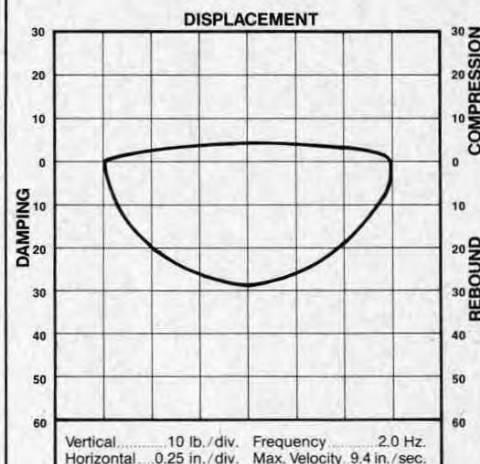
List price	\$1899
Engine	dohc Twin
Bore x stroke	78 x 78mm
Piston displacement	745cc
Compression ratio	8.5:1
Carburetion	(2) 38mm Mikuni
Air filtration	treated paper
Ignition	battery/points
Claimed power	55 bhp @ 7000 rpm
Claimed torque	43.4 ft. lb @ 3000 rpm
Lubrication system	wet sump
Oil capacity	8.5 pt.
Fuel capacity	3.8 gal.
Recommended fuel	unleaded
Starting system	electric, kick
Electrical system	12v 190w alternator
Clutch	multi-disc, wet
Primary drive	Hy-Vo chain
Final drive	# 630 chain
Gear Ratios, overall:1	
5th	5.24
4th	6.12
3rd	7.48
2nd	9.59
1st	13.73
Suspension, front	telescopic fork
Suspension, rear	swing arm
Tire, front	3.25-19
Tire, rear	4.00-18
Brake, front	11.3-in. disc
Brake, rear	10.5-in. disc

Total brake swept area	187 sq. in.
Brake loading (160-lb. rider)	3.6 lb./sq. in.
Wheelbase	57.1 in.
Fork rake angle	26.5 deg.
Trail	4.1 in.
Handlebar width	31.2 in.
Seat height	32.0 in.
Seat width	10.2 in.
Footpeg height	11.1 in.
Ground clearance	5.7 in.
Curb weight (w/half-tank fuel)	506 lb.
Weight bias, front/rear, percent	46.5/53.5

## PERFORMANCE

Engine speed @ 60 mph	4150 rpm
Power/weight ration, (160-lb. rider)	12.1 lb./bhp
Fuel consumption	52.5 mpg
Speedometer error:	
30 mph indicated, actually	27.3
40 mph indicated, actually	36.1
50 mph indicated, actually	45.5
60 mph indicated, actually	53.7
Braking distance from 30 mph	31.5 ft.
from 60 mph	132 ft.
Standing start 1/4-mile	14.12 sec @ 93.16 mph
Speed after 1/2-mile	104 mph

## FRONT FORKS

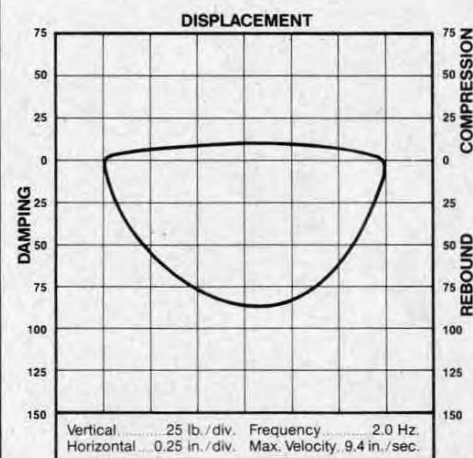


### Kayaba straight-leg fork

Fork travel	5.5 in.
Engagement	5.2 in.
Stanchion tube diameter	36 mm
Spring rate	40/48 lb./in.
Compression damping force	4 lb.
Rebound damping force	28 lb.
Static seal friction	12 lb.

The KZ750's forks match the nature of the bike; conventional and predictable. An appropriate dual-rate spring, controlled by conservative damping rates, provides a combination of comfort and control suitable for the typical street rider.

## REAR SHOCKS



### Kayaba shock, non-rebuildable

Shock length	12.5 in.
Shock travel	3.3 in.
Wheel travel	3.7 in.
Spring rate	100 lb./in.
Compression damping force	8 lb.
Rebound damping force	85 lb.

Like the forks, the rear end of this KZ Twin is conventional. Travel is adequate for the bike's intended application, and control is handled nicely by spot-on damping rates. The 100 lb. spring is ideal for most one-up riding, and adequate for an occasional two-up or laden ride.

Tests performed at Number 1 Products

