KAWASAKI KZ750

Kawasaki's middleweight contender has gained some displacement without added pounds, picked up inches of bicep, and now truly is what it was always meant to be: the performance champion of the 750 class. If only its footwork were the equal of its punch.

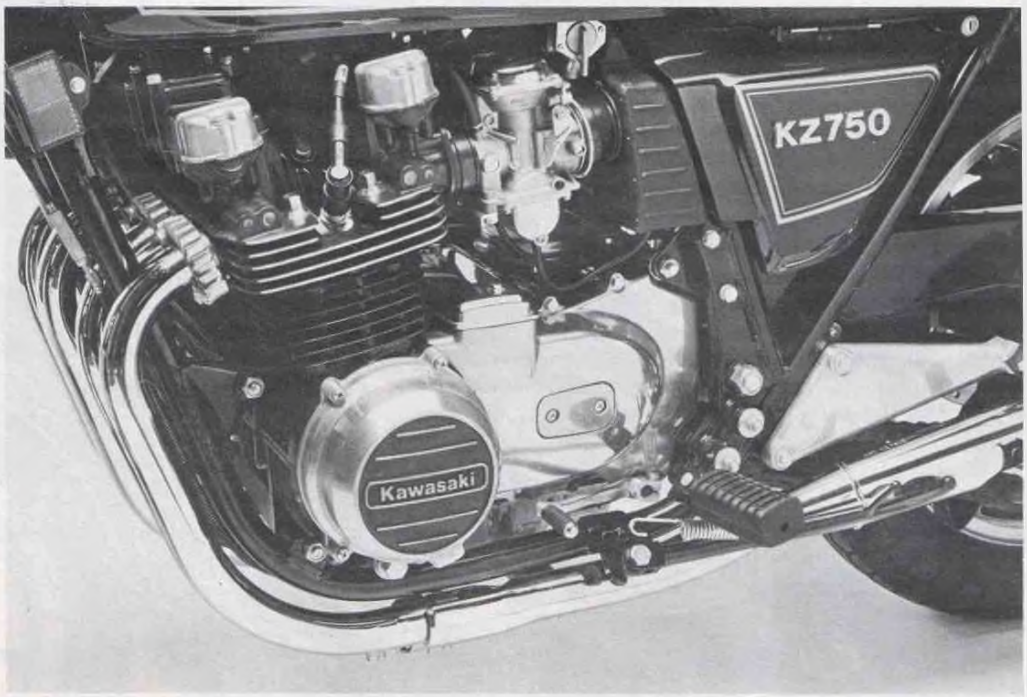
PHOTOGRAPHY: DAVE HAWKINS, ROBIN RIGGS

● ONCE UPON A TIME, NOT VERY LONG AGO, our friends at Kawasaki were seized by a novel idea: They would construct a four-cylinder 650 fast enough to out-perform all the 750s, yet be lighter and less expensive. Motorcyclists would welcome it as relief from the soaring triple-helix spiral of size, weight and price, and if everything went according to plan Kawasaki would sell about a jillion copies of their creation to folks who couldn't afford, or didn't want, a big KZ1000.

Kawasaki's plan almost worked. The KZ650 they introduced late in 1976 was lighter and less expensive than contemporary 750s, and those virtues attracted a profitable number of buyers. But the KZ650 failed to capture the hearts and wallets of many enthusiasts simply because it failed to match the performance of the then-new Suzuki GS750 or Honda's existing CB750. While tantalizingly close, the 40-incher wasn't as fast as it had to be for the company it was trying to keep, and it never got closer. Kawasaki had spotted the 750 opposition too much displacement.

Some of the people who bought KZ650s found a partial solution to the performance-gap problem on Kawasaki's own parts shelves. They discovered that the KZ400's 66mm pistons had the same wrist-pin diameter as the KZ650's, and were closely similar with respect to deck height. Thus, the four's cylinders could be drilled out two millimeters and fitted with lightly trimmed pistons from the twin. This raised the KZ650's displacement to 695 cubic centimeters, giving it a fighting chance against the full-sized 750s.

We can't say whether Kawasaki was inspired by the hot-rodder KZ650 owners or other influences, but the firm's middleweight four now has a larger clone—the new KZ750. The bigger number in that model designation gives a broad hint about one major difference between these Kawasakis. That's right, the new engine's displacement is greater, 739cc, which brings it to within a tablespoon of being a full three-quarter-liter-class device. The increase was gained by opening the 650's cylinder diameter to 66mm; and if that were the extent of the changes, you could expect a power improvement of about 13 per cent. But Kawasaki did more than merely attack the engine with a bigger boring-bar, and they got a lot more from it than the displacement figures suggest.



KZ750: displacement up 13 per cent; power up 28 per cent; weight down two pounds; prospects bright.

There wasn't much wrong with the original, pre-EPA KZ650 engine. It was fairly strong in terms of mid-range, made 48.96 bhp at 8000 rpm, and kept making power up to its 9500-rpm redline. In KZ750 guise, with a 13 per cent increase in working volume, it should be pumping out about 55 bhp and have its torque elevated a like amount. Surprisingly, only the latter part of this projection is correct. The KZ750's maximum torque is 38.44 pounds-feet, up from the 650's 33.25 lbs-ft, which is almost exactly in proportion with the displacement change. And the torque peak has remained at 7500 rpm. But maximum power has been boosted to 61.55 bhp, an improvement of nearly 26 per cent, and the new power peak is at 9500 rpm. That's still the point at which the tach is redlined; it doesn't mark the limit of available power. The KZ750 has the 650's willingness to deliver post-peak effort; there's 58 bhp to be had a thousand revs into the red zone.

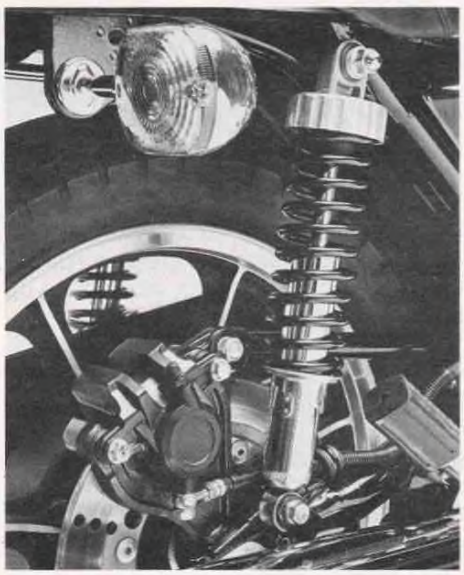
Kawasaki's KZ750 engine was so willing to extend itself that we checked its

KAWASAKI KZ750 TEST

power on the dynamometer all the way from 2000 rpm to 10,500 rpm. The horsepower numbers we obtained represent a quantum improvement over the KZ650, and not only in the upper register. From 4000 to 5000 rpm, which is a sector of the powerband you'd use in fifth-gear highway riding, the KZ750 is, on average, just under seven horsepower stronger than the KZ650. The difference in terms of maximum effort is even larger. Assuming that you use a powerband reaching a thousand revs above and below the two bikes' respective peaks, the KZ650 will give you an average of 47.13 bhp, but the KZ750 hands you 60.40 bhp to play with. That's a huge difference, 28 per cent, and it has not been shaved by an increase in weight. The original KZ650 weighed 498 pounds (225.9 kilograms)

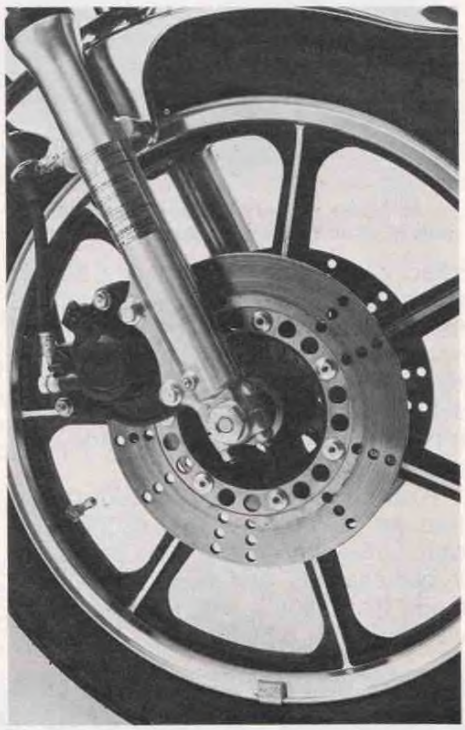
Extremely light, quick steering makes the KZ750 nimble at low speeds, distinctly abrupt at normal highway cruising speeds, and absolutely hair-trigger in spirited go-fast riding.

Kayaba worked hard to make damping adjustments easy, with a geared drive linking the collar and valve rod.



with a full tank of fuel; the new KZ750 actually is a couple of pounds lighter, weighing 496 pounds (224.9 kg).

The drag-strip performances we got from the KZ750 were a fine, brisk reflection of its highly favorable power/weight ratio. For the quarter-mile sprints, we used the same 10,500-rpm limit observed in dyno testing and found that, at last, Kawasaki does have a 750cc-class champion. The KZ750 was hammered through 20 runs, the slowest of which was almost a full second quicker than the best effort we ever got from the 650, and the 750 made most of its passes in the low twelves. Its best run, which was only a blink quicker than the 20-run average, was 12.356 seconds, at 106.88 mph. This is about two-tenths quicker than any other 750 we've tested.



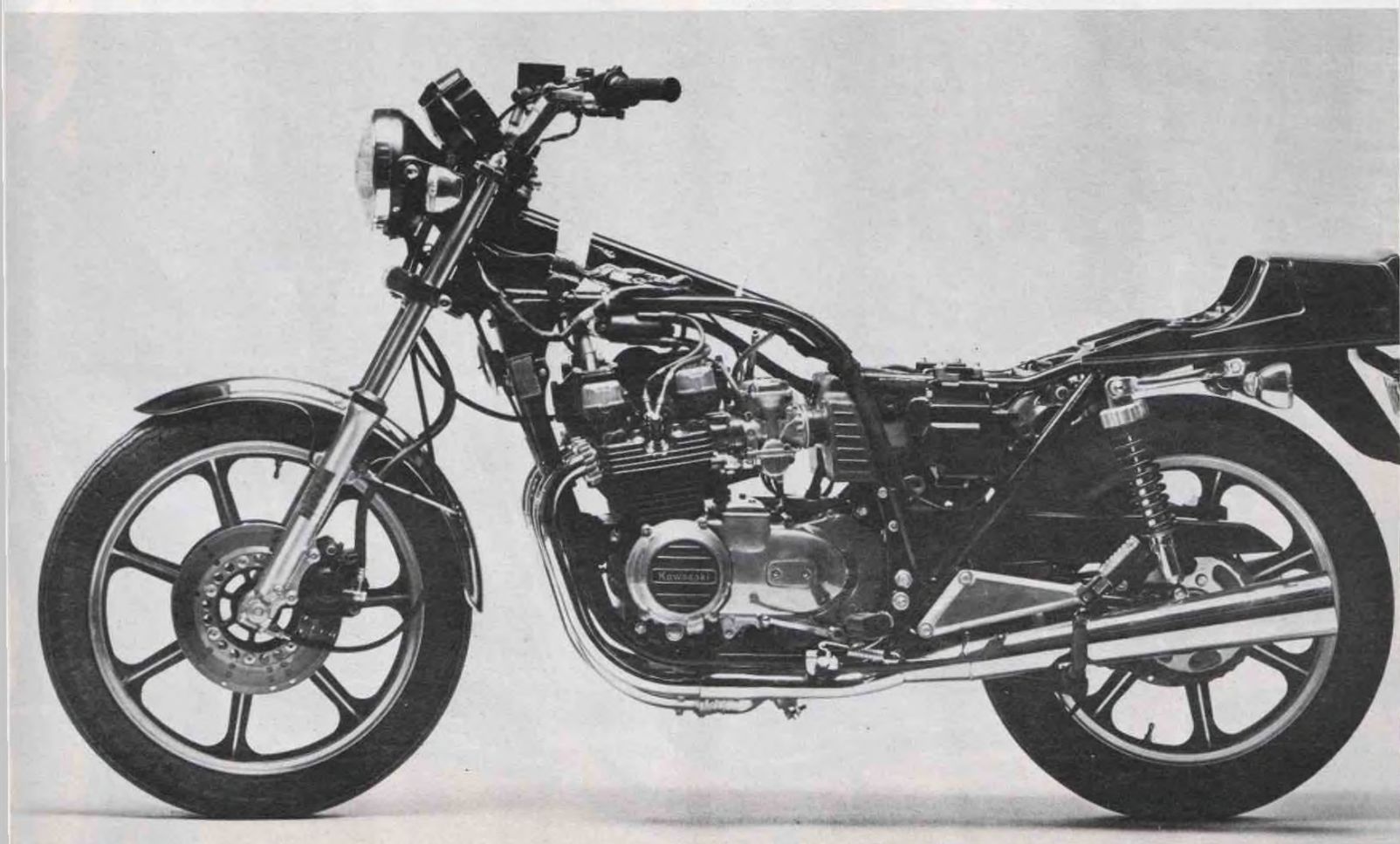
The stagger-spaced hole patterns in the brake discs are supposed to prevent harmonic vibrations.

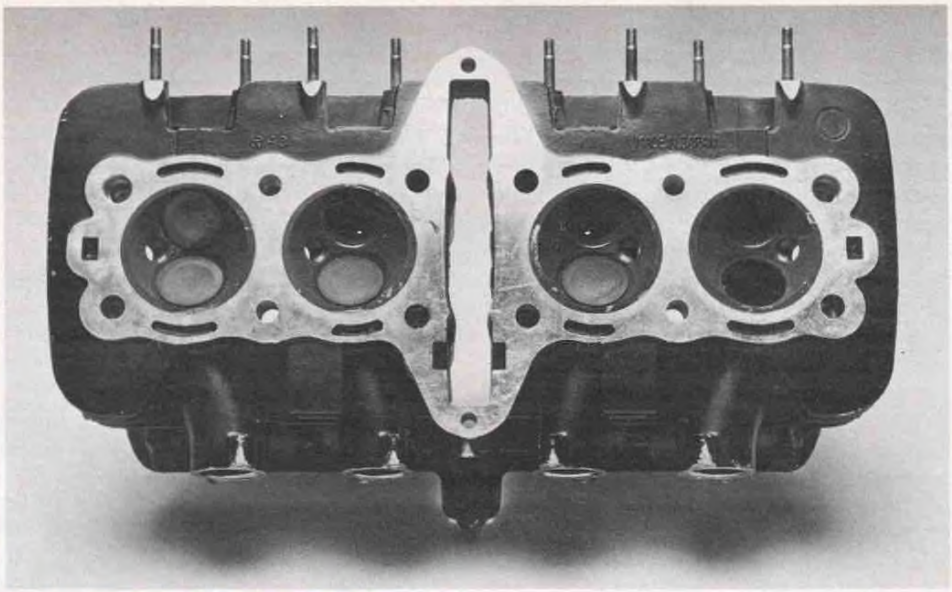
It is significant that the KZ750, while clearly the performance champion of its displacement class (and fast by any standard), does not have the horsepower of its nearest rivals. Suzuki's new 16-valve GS750 has a power edge over the Kawasaki; so does the redesigned Honda CB750. But the Suzuki is 47 pounds heavier than the KZ750, and the Honda carries 51.5 pounds more. The relationship between weight and performance seen here is underscored by the fact that the three 750s serving as examples all have virtually identical gearing, from first through fifth.

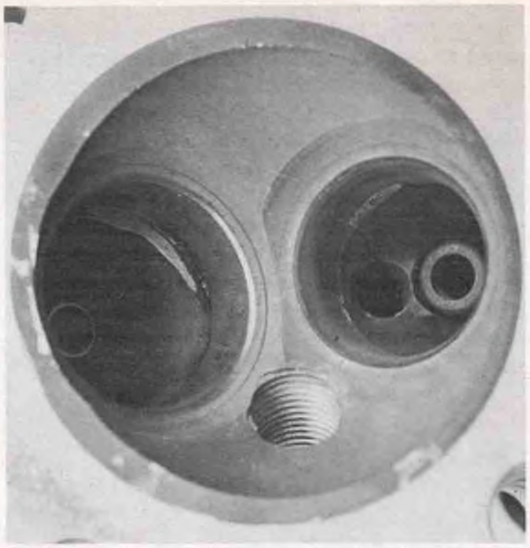
One of the changes Kawasaki made in transforming the 650 engine for the KZ750 was in valve timing specifications. The 650's intake valves opened 22 degrees before top dead center and closed 52 degrees after bottom dead center, for an open duration of 254 degrees; its exhausts opened 60 degrees before BDC and closed 20 degrees after TDC, staying open 260 degrees. In the KZ750 the intakes open eight degrees earlier and close eight degrees later, extending the duration to 270 degrees; the 750 has the same exhaust-open timing as the 650 does, but with the closing delayed 10 degrees, which gives it, too, a 270-degree open period. So the KZ750 has somewhat more sporting cams than the 650, and it is a tribute to the detail work that must have been done elsewhere in the engine that the torque peak should have remained at 7500 rpm while the power peak was lifted to 9500 rpm. Long duration cams usually have the effect of crowding torque and power peaks closer together, rather than spreading them apart, thus narrowing the useful part of the powerband.

Some of the KZ750's healthy top-end power may be supplied by its new Keihin carburetors, though it is equally possible that these were selected for their ability to alleviate smogosis without producing too many side-effects. The Keihins are CV-type carburetors, with butterfly throttles and manifold vacuum-controlled air slides. They have a throat constriction, a venturi, at the slide, but their throttle-bore diameter is 34mm and they almost certainly have a larger air flow capacity than the 24mm Mikunis fitted on the first KZ650. It must be added here that the Keihin carburetors certainly do not lack the ability to move fuel. The KZ750 we tested gave us mileage as high as 53.8 miles per gallon, when ridden gently; aggressive riding pulled it down to a low of 27.5 mpg, and the average for the test period was a gluttonous 37 mpg.

Because few of the KZ650 part numbers have been carried over to the KZ750, we'd guess that nearly every piece of the former has been revised—in some manner—in the making of the latter. We must assume that the forged plain-bearing crank has been rebalanced to compensate for the bigger pistons'







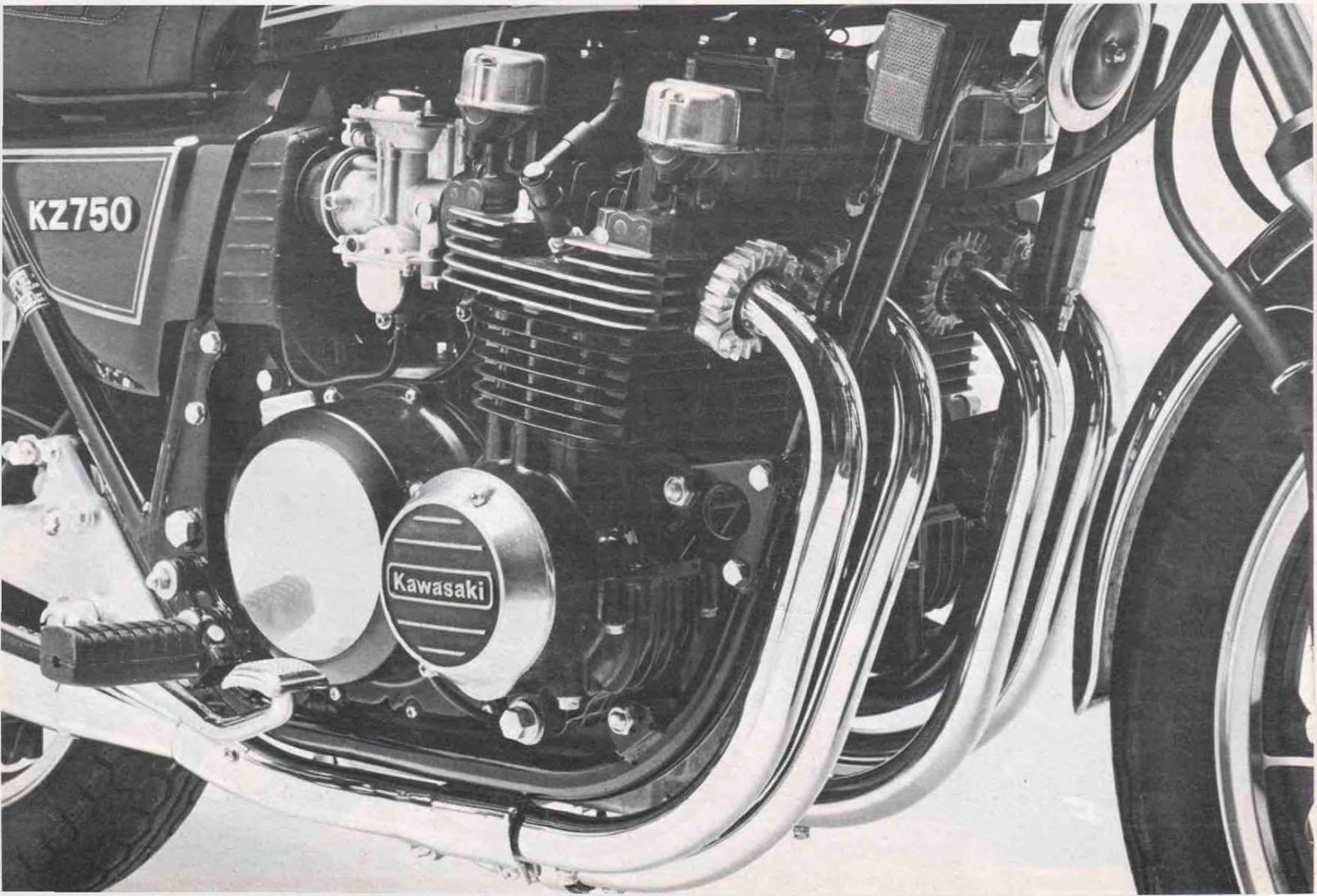
Squish bands around the bores, and anti-smog vents to admit fresh air above the exhaust valves.

KAWASAKI KZ750 TEST

weight, and the pistons themselves are, of course, new parts. Oddly enough, the combustion chambers do not appear to have been opened much even though they rest over cylinder bores four millimeters larger than before. Kawasaki has turned the mismatch into a virtue: by making the pistons' domes fit the chambers and leaving flat ledges joining them with the pistons' sides, they have created circular squish bands. The pistons' domes seem to be about the same height as in the KZ650, but the compression ratio has been lowered a half-point to 9.0:1. This may be the result of deepening the valve clearance pockets to make room for the added valve lift at TDC between the exhaust and intake strokes, and due to the space cleared for the KZ750's one-millimeter-larger exhaust valve.

Kawasaki used a Morse-patent "Hy-Vo" chain in the first stage of the KZ650's primary drive. It's still there, and another narrower Hy-Vo chain (made under license, in Japan) has been substituted for the roller chain that drove the dual overhead camshafts. This change should make the KZ750's cam drive quieter and more durable; Kawasaki presumably did not create new cam-chain guide shoes and cut different sprockets just for the sake of change. Incidentally, the new arrangement includes an automatic cam chain tensioner.

A reworked KZ650 clutch feeds power from the KZ750's engine to its transmission. Stiffer springs give it the necessary torque capacity, and though these have made the action a little stiff the clutch works well in ordinary use. The same



may not be said of its behavior at the drag strip. Under competition-type pressure the KZ750's clutch shudders, grabs and generally lets you know that it's feeling abused.

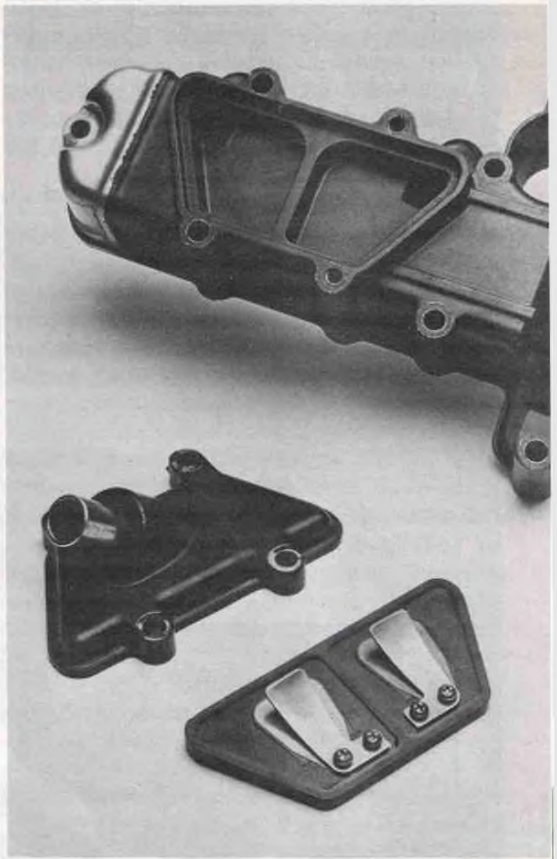
All of the KZ750 transmission ratios except fifth are the same as in a KZ650. The top-gear ratio has been changed from 0.89:1 to 0.88:1, which is a trifling difference unless you take into account the gear-tooth numbers. In the KZ650 fifth was a 27-tooth gear driving a 24-tooth gear; in the KZ750 you have a 24-tooth driver and 21-tooth driven gear. Why the shuffling of tooth numbers? The only answer that comes to mind is that they wanted bigger (hence, fewer) and stronger teeth on the gears that get the most work.

A similar shuffle has been applied to the Kawasaki middleweight's final drive. The KZ650 drove its rear wheel by means of a 530 chain and 42/16 sprocket combination; they've switched to a heavier 630 chain (like the KZ1000's) for the KZ750, and 33/13 sprockets. This gives the 750 an overall drive ratio, in fifth gear, of 5.66:1 and allows it to cruise at 60 mph turning a couple of hundred fewer revs than the KZ650 does.

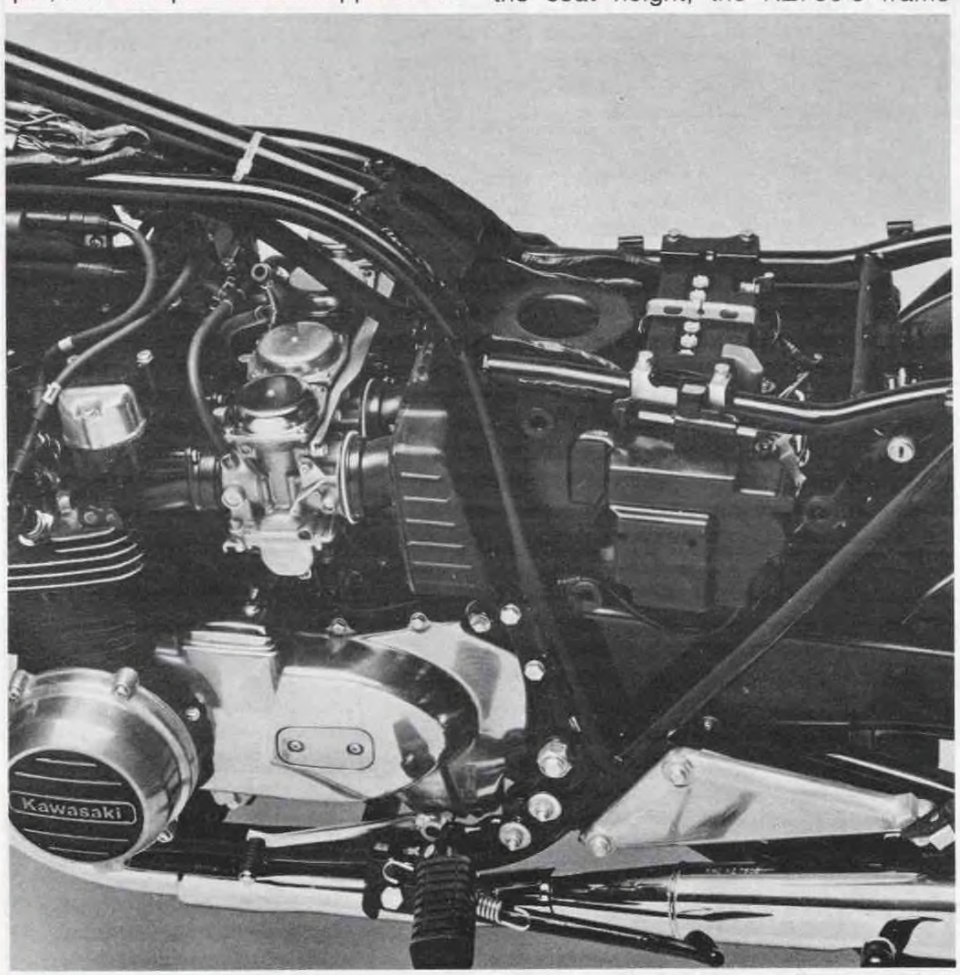
The matter of cruising engine speed is important, because the KZ750 is in one respect very much like the KZ650: Its engine is exceptionally smooth below 5000 rpm, but sets up a buzz as it approaches 6000 rpm and makes both the mirrors and the too-hard handlebar grips turn into blurs at anything over 6000 rpm. Passengers tell us that the KZ750's rear pegs are foot-tinglers at all engine speeds, a phenomenon probably traceable to the pegs being mounted at the ends of longish aluminum extensions bolted on the frame.

Short-legged riders will like the KZ750's saddle, which is lower than most and, allowing for compressed padding, places one's nether section within about 30 inches of the ground. We liked the seat's lateral profile, which is broad and relatively flat; we were less pleased with its lengthwise shape. In trying to get the rider seated low, Kawasaki put a substantial dip in the seat's forward half, and you find yourself slipping inexorably into that depression. You won't object to the position if your height is five-feet, nine-inches or less, but six-footers will begin feeling terribly cramped if they ride Kawasaki's KZ750 for more than an hour without stopping. Passengers of any height will like or loathe the rear half of the KZ750's seat more or less in direct proportion to their feelings about the person at the controls, because their piece of the saddle slopes steeply forward and whatever their intentions they'll end up snuggled against the rider's back.

Apart from the repositioning of two top tubes, which have been lowered to drop the seat height, the KZ750's frame seems to be much the same as the one that held the first KZ650 together. But there is considerable difference elsewhere in the chassis. For one thing, the new model has an air fork. It's a center-axle design (unlike the one you get with the "special" version of the KZ750) made by Kayaba, and it supplies 5.8 inches of lightly damped travel.



Reed valves in four cam-cover chambers admit air into passages leading down to the exhaust ports.



The frame tubes flanking the battery have been dropped to lower the stepped-seat's forward-half an inch.

Kawasaki recommends that the fork be pressurized at between 8.5 and 13 pounds per square inch. Even at the higher pressure the fork provides a reasonably comfortable ride over most road surfaces, but it isn't as stiction-free as the fork on Honda's CB750F and doesn't give anything like a smooth ride unless you go for the lowest pressure. The KZ750 doesn't nose-dive under braking too severely when fork pressure is reduced.

Kayaba also makes the rear shocks fitted on the KZ750. These have adjustable rebound damping with four settings, the firmest being some 60 per cent stronger than the minimum. We've seen plenty of adjustable rear dampers since their introduction by Suzuki two years ago, but Kayaba has come up with another breakthrough in making these ultra-easy to adjust. Instead of fitting a small, hard-to-reach nubbin inside a recess under the upper mounting eye they've connected the adjustment shaft to a large collar surrounding the top spring retainer A spring-loaded detent tells you, by feel,

when the settings are properly indexed, and the adjustments are so easily made that you can do your experimenting while riding. Just be sure you remember which way you've turned the right collar when you reach for the left one. Having one damper set full-hard and the other at minimum strength could put a twitch in the bike's handling.

Our test-riding experiences suggest that Kawasaki should consider an overall firming of the KZ750's damping, and we would definitely recommend stronger control for the rear suspension. The rear damping is so limp when set on "one" that we kept it a notch higher even for unhurried highway cruising. Numbers "three" and "four" are appropriate for swooping along mountain roads, but when these become fast and bumpy you'll find yourself wishing there were a "five" somewhere on the dial. Stiffer rear springs would help the KZ750's fast-turns behavior, too, as the ones it has are soft and you get only 3.8 inches of rear-wheel travel before the suspension thuds against its stops. Despite the soft springs, the KZ750 does not have a real cornering-clearance problem. You'll feel the footpeg end touch, but you won't drag the solid hardware (the bike's ex-

Make and model ..... Kawasaki KZ750-E1
Price, suggested retail (as of 5/20/80) $2749

PERFORMANCE
Standing start ¼-mile ..... 12.36 sec. @ 106.88 mph
Engine rpm @ 60 mph, top gear 4532
Average fuel consumption rate ..... 37.0 mpg (15.7 km/l)
Cruising range, main/reserve ..... 159.1/18.5 mi. (256.0/29.8 km)
Load capacity (GVWR less curb weight) ..... 166.9 kg (368 lbs.)
Maximum speed in gears @ engine redline ..... (1) 47.5 (2) 67.9 (3) 87.1 (4) 106.4 (5) 125.8 mph

ENGINE
Type ..... Four-stroke transverse four, air-cooled with dual chain-driven overhead camshafts
Bore and stroke ..... 66.0 x 54.0mm (2.60 x 2.13 in.)
Piston displacement ..... 739cc (45.1 cu. in.)
Compression ratio 9.0:1
Carburetion ..... (4) Keihin 34mm constant-vacuum
Exhaust system ..... Four into two
Ignition ..... Battery-powered inductive, magnetically triggered
Air filtration ..... Dry cartridge, disposable
Oil filtration ..... Paper element, disposable
Oil capacity ..... 3.5 liters (3.7 qts.)
Bhp @ rpm ..... 61.55 @ 9500
Torque @ rpm ..... 38.44 @ 7500

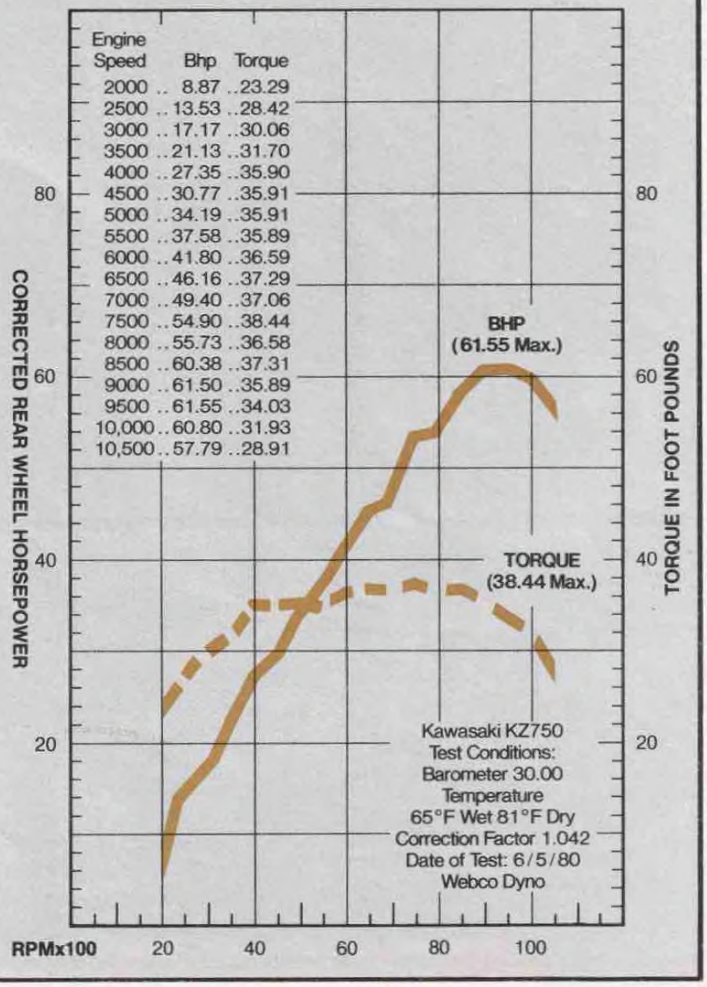
TRANSMISSION
Type ..... Five-speed, constant-mesh, wet clutch
Primary drive ..... Hy-Vo chain and straight-cut gear, 2.55:1
Final drive ..... #630 chain, 2.54:1
Gear ratios, overall ..... (1) 15.09 (2) 10.56 (3) 8.23 (4) 6.74 (5) 5.66:1

CHASSIS
Type ..... Twin front and rear downtube frame
Suspension, front ..... Coil/air-spring center-axle fork; 146mm (5.8 in.) travel
rear ... Swing arm and (2) adjustable-damping shocks; 95mm (3.8 in.) axle travel
Wheelbase ..... 1420mm (55.9 in.)
Rake/trail ..... 27°/107mm (4.2 in.)
Brake, front ..... Hydraulic, dual-disc, 260mm (10.2. in.) rotors with single-piston calipers
rear ..... Hydraulic, single-disc, 260mm (10.2 in.) rotor with single-piston caliper
Wheel, front ..... Cast, 1.85 x 19
rear ..... Cast, 2.15 x 18
Tire, front ..... Tubeless, 3.25 H 19 Dunlop Gold Seal F8
rear ..... Tubeless, 4.00 H 18 Dunlop Gold Seal K127
Seat height ..... 794mm (31.3 in.)
Ground clearance ..... 152mm (6.0 in.)
Fuel capacity, main/reserve ..... 16.3/1.7 liters (4.3/0.5 gal.)
Curb weight, full tank ..... 224.9 kg (496 lbs.)
Test weight ..... 299.8 kg (661 lbs.)

ELECTRICAL
Power source ..... Permanent-magnet alternator, 238 watts
Charge control ..... Solid state regulator
Headlight beams, high/low ..... 60/50 watts
Tail/stop lights ..... 8/27 watts
Battery 12V 12AH

INSTRUMENTS
Includes ..... Speedometer, odometer and resettable tripmeter, tachometer, voltmeter. Indicators for turn signals, neutral, high beam, low oil pressure
Speedometer error, 30 mph indicated, actual 30.66
60 mph indicated, actual 61.18

CUSTOMER SERVICE CONTACT
Kawasaki Motor Corp., USA
3630 Garry Street
Santa Ana, CA 92704
Attn: Customer Services
(714) 540-1600



haust heat-shields and centerstand) until you've worn bevels on the pegs and have crowded your luck farther than anyone should.

Somehow, perhaps through the change of tires, the KZ750's handling is even quicker than that of the KZ650. It's extremely nimble at low speeds, as when you're trolling around town; it becomes distinctly quick at normal highway speeds; and it's absolutely hair-trigger when pressed into full go-fast travel. To complicate this, the KZ750 tends to tuck its front tire inward when cornering, requiring a compensating pressure on the handlebar to keep it from increasing its bank-angle and tightening its line toward the inside of a turn. You can become accustomed to the bike's steering characteristics, but there's no doubt in our minds that the KZ750 is much harder to ride quickly and smoothly than, say, Honda's neutral-steering CB750F. The Kawasaki's ample cornering clearance makes it a better backroad stormer than the Suzuki GS750ET, and its willingness to make abrupt cornering-line changes is an advantage on smooth roads. But when ridden on bumpy or pot-holed pavement the KZ750's surging and wallowing on its overly soft suspension make precise control difficult. A highly skilled rider can compensate for its tendency to bobble and change directions; people of average ability will have to ride within their own limitations because the KZ750 doesn't do a thing to make you seem better than you are.

Kawasaki has equipped the KZ750 with cast wheels and tubeless tires. The tires, Dunlop Gold Seals, handle wet pavement well and provide entirely adequate cornering traction for most riders. The Fearless Fliers among us (people who intimately know, or will soon learn about, plaster and bandages) will discover that there is an outer limit to the Dunlops' capabilities. The KZ750 doesn't have quite enough cornering clearance to let you lean it off its tire-tread edges, but you can feel impending "sidewall" in the way the bike scrubs sideways just before its pipes drag.

The KZ750's triple-disc brakes have an interesting pattern of holes drilled through them. The holes are placed mostly in sets of three, (with one set of two) and those sets are irregularly spaced around the discs. It is said that the spacing prevents harmonic vibrations, and we suppose the holes lighten the discs, disperse water, vent gases boiling out of the pads and all the other good stuff usually claimed for them. Curiously, only the outer pairs of holes in the three-hole rows are swept by the brake pads; the innermost holes are either wasted or not nearly numerous enough.

Single-piston calipers are fitted over all three discs and provide good stopping power, though with less than perfect de-

(Continued on page 64)

Kawasaki KZ750 *Continued from page 63*

portment. The rear brake is fine, strong but not too sensitive. But the dual-disc front brake has a spongy feel when cold, and this turns into a pronounced mushiness when it's used hard enough to get it hot. Fortunately, the original (if springy) feel returns when the brake cools.

The KZ750's front brake master cylinder will be an annoyance for some riders. It doesn't leak, or anything as gross as that, but it does prevent attempts to rotate the brake lever down much below the level of the handlebar grip. Most of us prefer to have the lever positioned lower, where it can be reached and squeezed from a straight-arm stance without an upward rotation of the wrist. You won't get the KZ750's front brake lever down that far without cutting a clearance relief in either the handlebar or master cylinder, and neither is an acceptable remedy. Tilting the entire handlebar forward would correct the lever position, but you can't do that without ruining the otherwise-comfortable grip-orientation.

We can't complain much about the effects EPA regulations have had on the KZ750. Its Keihin carburetors tread the combustible side of the lean limit with almost total aplomb, leaving only a slight off-idle softness—not quite a hesitation. The KZ750's agreeable response to throttle is present even in the morning chill. It needs only a few moments on the chokes, applied by lifting a carb-mounted lever, and it's ready to ride away. In this respect the Kawasaki is much better than the average emissions-controlled motorcycle, which seemingly can take hours to come fully awake.

Some of the KZ750's good throttle response (obtained without an accelerator pump) must be there simply because Kawasaki chose not to rely on lean carburetion alone to clean up its exhaust. What they did, instead, was to provide air-injection in the engine's exhaust ports. As you may know, the positive pressure pulses in exhaust ports are followed by brief periods of negative pressure. Kawasaki used the latter to draw air into the ports, via passages leading down from sets of reed valves in a chamber above the cam cover. The chamber is supplied by a tube connected with the air filter, and there's an in-line, manifold-vacuum-controlled valve to shut off the air on engine over-run, which prevents backfiring. When the air does flow into the exhaust ports it provides oxygen for previously unburned hydrocarbons, converting them to harmless carbon dioxide and turning the EPA's frowns to smiles.

If you handle your own service chores, the KZ750 will both delight and annoy you; it has both assets and one fairly large problem from the shade-tree mechanic's viewpoint. All but the masochists among us will like the sight-glasses provided for checking front brake fluid

(Continued on page 88)

Kawasaki KZ750 *Continued from page 64*

and engine oil levels, and the bike's magnetically triggered ignition system means never having to change contact-breaker points. The oil and air filters are easy to change, and servicing the latter will give you a chance to admire the streamlined entry into the airbox. Cam chain adjustments are automatic, and though changing the endless drive chain involves removing the swing arm, you can get the rear wheel off without a fight using only the wrenches in the tool kit. You shouldn't have to bother with the heavy-duty, O-ringed chain too often; the tubeless tires' flats can be fixed by stuffing the holes with rubber plugs, which you get by buying Kawasaki's tire-fix kit.

The single service problem you face is setting valve clearances. Unlike the KZ1000, the KZ750 has its valve-clearance shims beneath its inverted-bucket cam followers. To set its valve clearances you must check what they are, then remove the cams and followers to gain access to the shims, which are small caps fit over the valve stems' ends. The final step is to substitute thicker or thinner shim caps, as is appropriate, and then reassemble the cams and their timing drive. It's a struggle you may want to leave to your dealer's shop mechanics. When you pay the bill, which probably will be a one-time occurrence (the shims don't wear or jiggle out of adjustment), remind yourself that it's a small price to pay for added reliability at very high engine revs.

Kawasaki applied some manufacturing economies in creating the KZ750, with results both good and bad. Among the former is the motorcycle's price, $2749, which is $50 under what is asked for a Suzuki GS750 and $99 less than Honda's CB750F. It can't be said that cost-cutting has hurt the KZ750's performance, and the bike has plenty of what manufacturers are wont to call "features," including cast wheels and triple-disc brakes. The finish is excellent, too, with the attractive maroon paint highlighted by gold pinstripes. But the bike's single small horn squawks a feeble yet unmistakable "cheap," and its headlight is no better than adequate.

In a sense, the KZ750 marks Kawasaki's return to the "nickel rocket" school of motorcycle design. The new 750 is not so thumb-in-the-eye crude as the old two-stroke triples, but, like them, it shows an emphasis on performance and low price—with such subtleties as handling given only secondary consideration. Kawasaki has given the KZ750 the hottest acceleration in its class and excellent mid-range punch, both qualities we Americans adore, and they have tried to make it more affordable than its rivals. It isn't all-new, or all-inclusive, but it is all-muscle and that seems to us a prescription for success. ◉