Tests: Kawasaki GPz1100, KX500, Yamaha Virago 500 and IT490

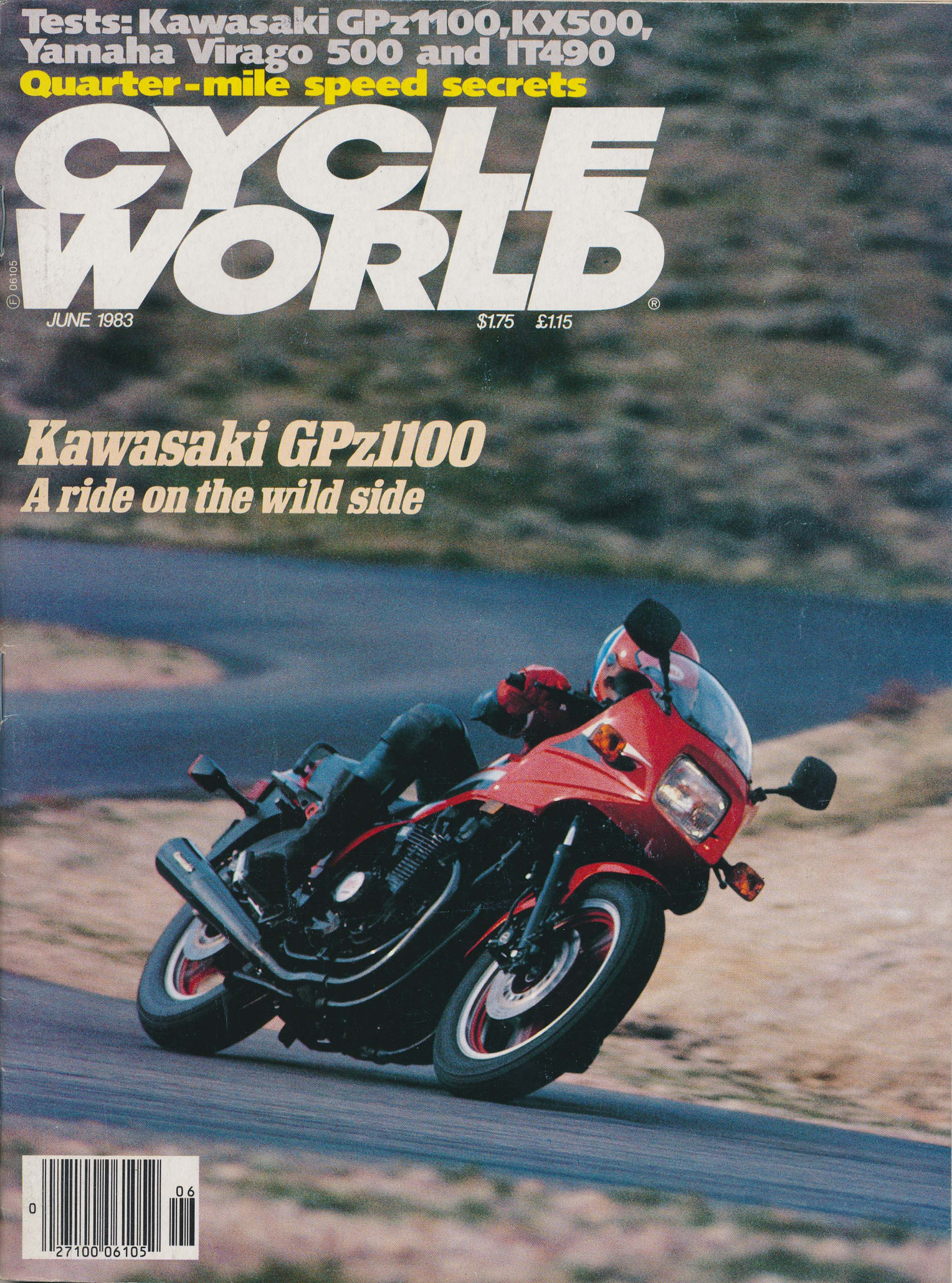
Quarter-mile speed secrets

CYCLE WORLD®

JUNE 1983 $1.75 £1.15

Kawasaki GPz1100

A ride on the wild side



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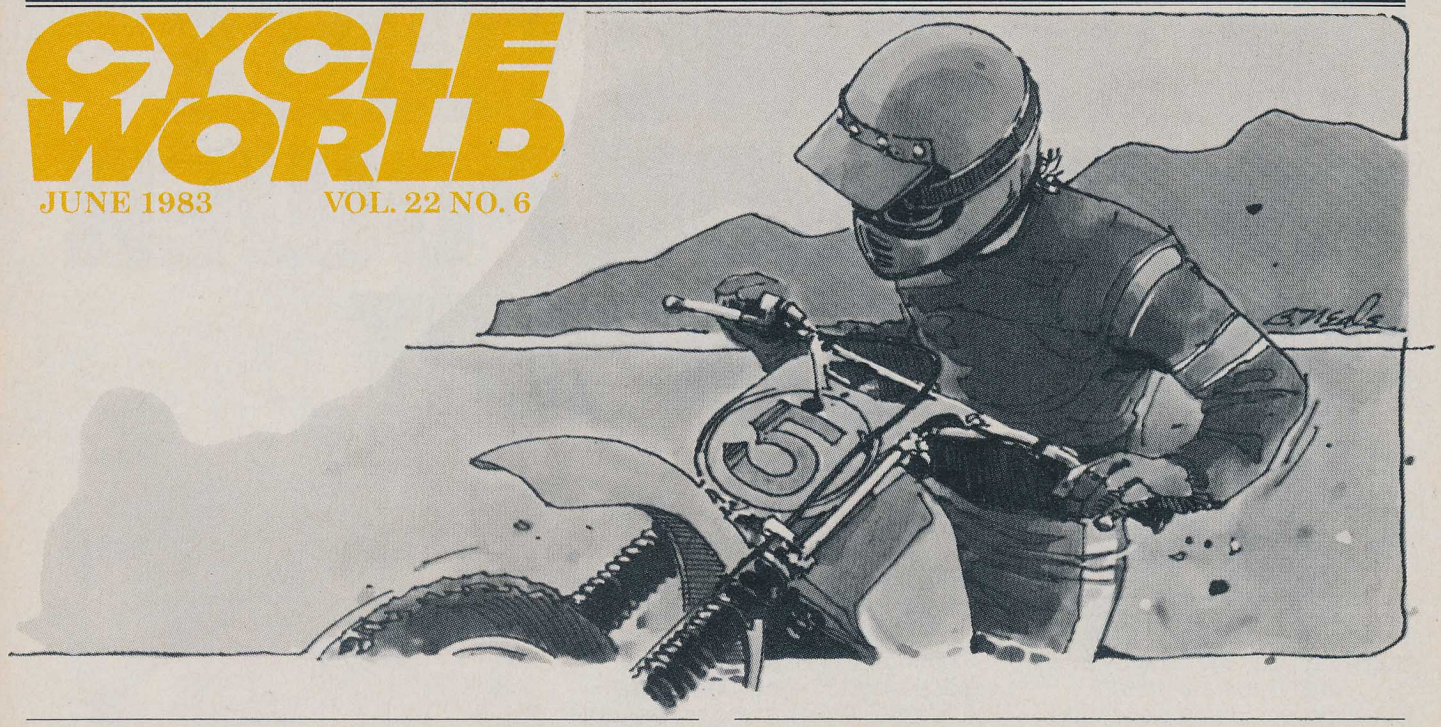

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The Kawasaki GPz1100 Photographed by Steve Kimball

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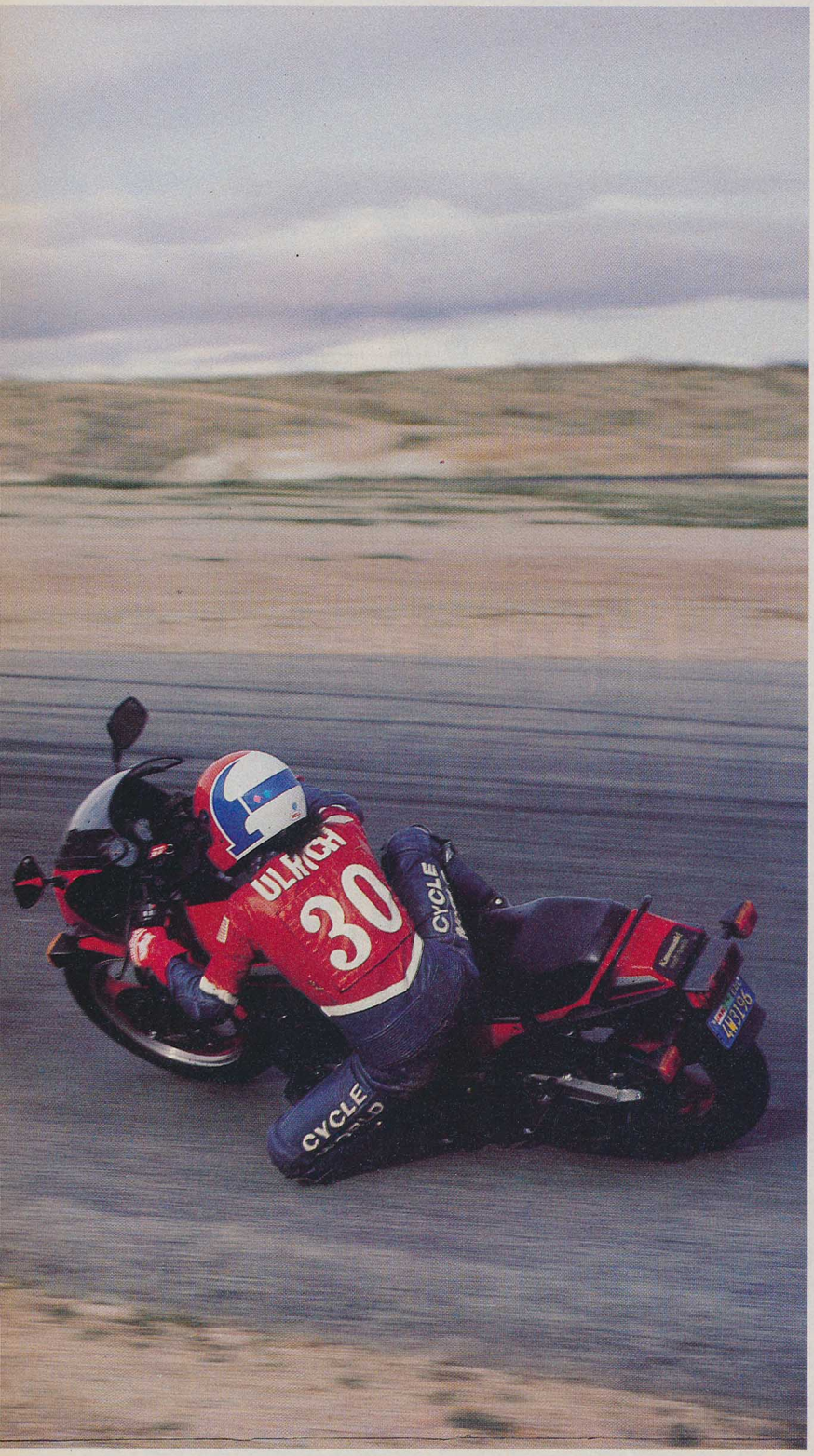
Illustration by Bill Neale

KAWASAKI GPz1100



CYCLE WORLD TEST

The competition has heated up since Kawasaki reinvented the modern high-performance Four a decade ago. Back then the 903cc Z-1 stood alone, fast when the rider wanted speed, docile when the rider didn't, and reliable all the while. It was the prototype of a new class, the 1000cc Superbikes, and it spawned a generation of pretenders to the throne.

Ten years have passed, Kawasaki's supremacy has been challenged and the quickest and fastest bikes aren't 1000s, but 1100s. Kawasaki isn't interested in being one of the many. Kawasaki wants its crown, and it wants it now.

The GPz1100 is how Kawasaki plans to reestablish itself as king of the Superbikes.

That's a tall order. Things aren't as simple as they were 10 years ago. Suzuki has its GS1100, Honda its CB1100F and its V65.

First impressions always mean something, and that's where Kawasaki draws first blood. The GPz1100 is bright red, the color of speed, with a frame-mounted half fairing similar to those seen on Formula One four-strokes. Sweeping lines unify the fairing, gas tank, sidepanels and tailsection. The wheels are red, too, with polished aluminum highlights, and there are race-proven features like anti-dive forks and single-rear-shock suspension.

The GPz's engine has the same bore and stroke of 72.5 and 66mm in 1983, and the general engine layout is unchanged. It's still an air-cooled, fuel-injected, dohc, 1089cc inline Four mounted across the frame with rubber front engine mounts and O-ring chain final drive. As always, it has straight-cut primary drive from the roller-bearing crankshaft to the clutch basket and a five-speed, two-shaft transmission.

But what's new in 1983 is more power, power produced by a number of top-end changes. The combustion chamber is smaller (31.1cc from 34.5cc) with a new polyspheric shape replacing the 1982 model's single hemispheric shape. The new combustion chamber works with a change in exhaust valve angle (30.5° from vertical vs. 31.5°) to make room for larger valves (32.5mm exhaust and 38mm intake vs. 1982's 32 and 37mm), and the piston dome is higher. Compression ratio is up from 8.9 :1 to 9.5 :1.

There's more valve lift, 9.5mm for both intake and exhaust compared to last year's 8.7mm, and intake and exhaust cam duration is increased 12°.

The crankshaft and bearings are unchanged, but the connecting rods are larger and the piston wrist pin measures 18mm across, to the 1982 engine's 17mm wrist pin. The valve lash adjustment shims are positioned underneath the valve buckets this year, and are much smaller and lighter than the old-style shims that fit into recesses on the top of the cam follower. Smaller and lighter adjustment shims mean less inertia in the valve train, and this is important because the new camshafts are more radical. Reducing valve train weight means the valves can be opened faster, sooner, improving breathing, which improves power. The only shortcoming to this system is that camshafts must be removed to adjust the valves.

The Digital Fuel Injection system has several new

features, including the ability to continue functioning in the event of a sensor failure (to allow the rider to reach a Kawasaki shop, albeit with less performance along the way); a rev limiter which cuts the fuel supply to the engine at 11,000 rpm; and a small light on the fuel injection black box that indicates the cause of a system failure by flashing in code (For example, one long flash followed by two short flashes indicates a problem with the air intake pressure sensor).

Oil consumption developed into a problem with some 1982 GPz1100s and KZ1000Js, and Kawasaki engineers have made changes to piston rings and pistons to improve oil control. The rings have wider static end gaps, and, if measured before installation on a piston, are larger in diameter while retaining the same width. So, when the rings are installed in the cylinder, they exert more pressure on the cylinder wall. That extra bit of pressure, or traction, increases the loads on the piston ring lands at TDC and BDC, pounding the lands and deforming the ring grooves. Kawasaki's answer to that complication was to coat the dome and top of each piston, down past the oil ring groove, with a hard anodized finish that is both stronger and more slippery than bare aluminum.

As in 1982, each GPz1100 cylinder head is hand-finished in the intake port just behind the valve seat, to smooth the transition from the port over the seat. The 1983 airbox is slightly larger, 6.5 liters vs. 6.3 liters, and the valve springs are stronger. The transmission engagement dogs are undercut to prevent missed shifts or jumping out of gear.

The combination of changes to a proven package are good for 10 more bhp at about 8500 rpm, although that extra peak power comes at the expense of a few less horsepower below 5000 rpm. The difference in torque shows the same pattern: about 4.0 lb–ft. more torque at high rpm (74 at 8000 vs. 70 at 7000) with an equivalent loss below 4000 rpm.

While the GPz's engine is revised, its chassis is entirely new with larger diameter tubes, different backbone construction, larger gusset plates behind the steering head and Uni-Trak single rear shock suspension. Rake is still 29° but trail is increased to 5.12 in., from 4.72 in. The wheels are smaller in diameter and are wider, 2.15 x 18-in. front and 3.00-17-in. rear, carrying 110/90-18 and 130/90-17 tires instead of 1982's 110/90-19 and 120/90-18 tires.

The dual 11-in. front brake discs and the single 10.6-in. rear disc bolt directly to the enlarged wheel hubs. The brake calipers each have a single, large piston pushing rectangular, sintered-metal pads.

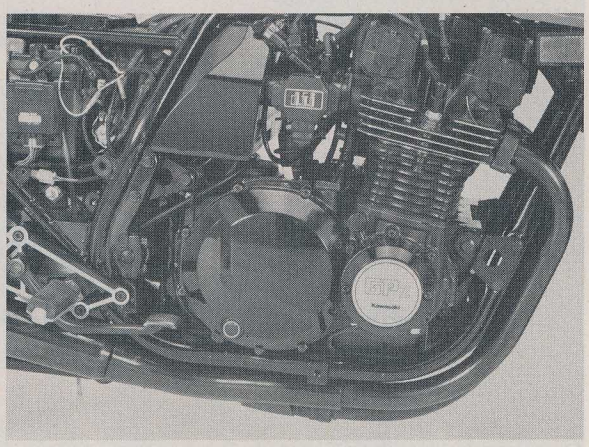
The wheelbase is an inch longer at 61.6 in. and the swing arm is welded, box-section aluminum with eccentric axle adjusters. The top of the Uni-Trak shock absorber is mounted to the frame, while the bottom is connected to two parallel levers. Each lever is in turn connected to a pivot on the frame, with another lever running from about the center of each link to the bottom of the swing arm. The linkage reduces the amount of shock travel in relationship to rear-wheel travel, and makes shock action progressive.

The swing arm rides on two needle roller bearings with a ball bearing added on the right side of the pivot, to deal with side loads. The Uni-Trak shock absorber uses both a coil spring and air pressure, and rebound damping is adjustable, with four settings. Shock air pressure recommendations range from 14

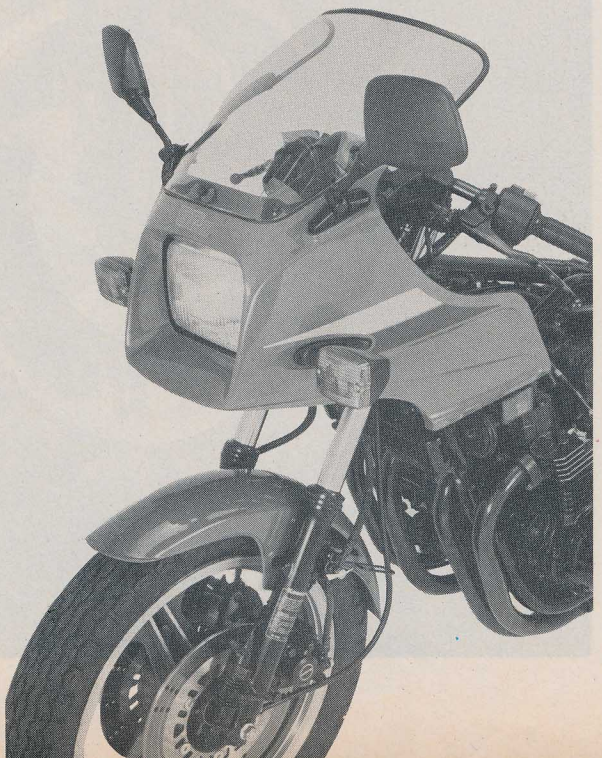
A trip to the cam grinder breathes new life into Kawasaki's aging superbike.

Photos by Steve Kimball

Parts on the sides of the GPz1100 are tightly tucked in for lots of cornering clearance.



Some of the changes made for 1983 are designed to improve oil control and reliability, including more piston ring tension, larger piston wrist pins and beefier connecting rods.



GPz fairing bolts to the frame and is made of ABS plastic. Forks have 37mm stanchion tubes and include anti-dive fittings.

psi for normal street use to 28 psi for racetrack or very hard canyon riding. The shock air fitting is mounted on the frame just below the right side panel. The damping adjustment knob is also below the right side panel, with minimum rebound damping selected by pushing the knob in and maximum damping selected by pulling the knob out.

The front forks have brake-fluid-activated anti-dive fittings on both legs, with 37mm stanchion tubes (the 1982 GPz1100's forks had 38mm stanchion tubes). The upper triple clamp is aluminum, the lower clamp steel, and the steering stem rides in tapered roller bearings. The half fairing is supported by a framework of steel tubes, which in turn bolts to the motorcycle frame at three points, including the steering stem and downtubes on each side. The fairing framework also carries the rectangular, quartz-halogen headlight. The front turn signals and the rear-view mirrors are mounted on the fairing.

For handlebars the GPz has very short forged aluminum clamps connecting the tops of the fork tubes to straight, tubular bars. The 26 in. wide handlebars are of necessity mounted very low, where they can fit into the fairing at full steering lock. No adjustment is possible and the resulting seating position is extreme. On the ends of the handlebar tubes are screw-in protective caps. Inboard of the grips are some of the largest control pods known to mankind. On the left pod the usual assortment of controls is accompanied by a hazard flasher switch. A horn lever is used, and it operates two loud horns. On the right pod there's a clever kill switch incorporated with the starter button. Being one control for both, it's virtually impossible to hit the start button when it's pushed to one side, where it acts as a kill switch. No more grinding away with the starter because the kill switch was accidentally moved.

A few parts on the motorcycle in showrooms will be different from those on our test bike. Ours, as it turns out, was a pilot production machine, and it has sand-cast muffler brackets and vacuum molded parts for the fairing and seat base. This saves 6.5 lb. over the weight of the production bike. Any weight savings would be beneficial to the mighty GPz1100, because it weighs in at 571.5 lb. with a half tank of gas. That's real weight, measured on a certified scale. And the production bike weighs 578 lb.

Last year the GPz1100 only weighed 559 lb. This year's Suzuki Katana 1100 only weighs 540 lb., Honda's CB1100F weighs 567 lb. and the V65 Magna weighs 579 lb.

Put all the numbers together and the GPz1100 ought to steer like an International Harvester Loadstar. The 61.6 in. wheelbase is very long, the 29° of rake and 5.1 in. of trail should make for arrow-like stability and turning ability. The stability it has. The turning ability is better than expected. Even with the narrow handlebars the Kawasaki is able to turn as quickly as the other over one liter bikes. This isn't to say it steers like a good 750. It doesn't. It is ponderous and needs lots of muscle, but when that muscle is exerted, the bike goes where it's pointed. The smaller diameter front wheel offers some benefit here, and the front tire profile is important. The change to a smaller diameter but wider tire decreases the pneumatic trail by changing the tire contact patch from a

long narrow patch to a shorter, and wider patch. No part of that patch is as far from the center of the contact, making for less leverage on the tire.

Suspension adjustments affect handling, too. On the GPz1100, the suspension preload is adjustable by changing air pressure in the forks and the rear damper. Set for normal street use, the suspension soaks up bumps before they reach the rider, producing a comfortable ride over most road surfaces. With the rear shock damping set up to the third or fourth setting, air pressure set at 25 psi and fork pressure at 7.5 psi, the suspension is ready to run normal weight riders up any twisty section of asphalt at unspeakable speeds. As delivered from the factory the GPz is equipped for very fast racetrack speeds, though it can be ridden quicker with a set of better tires. It's not that the stock tires are not good, they're fine for most riding, and deliver better mileage than most aftermarket tires as well, but they don't feel quite secure on the ragged edge and throwing a 578-lb. motorcycle into a sweeping turn at the top of fourth gear, throttle on, asks a little too much of the GPz's standard tires. Both ends slide. One GPz1100 has already been winning California club races, its rider changing the stock tires after the first practice session at the first race of the season, for just that reason, settling on a Dunlop Elite rear and Continental TK22 front.

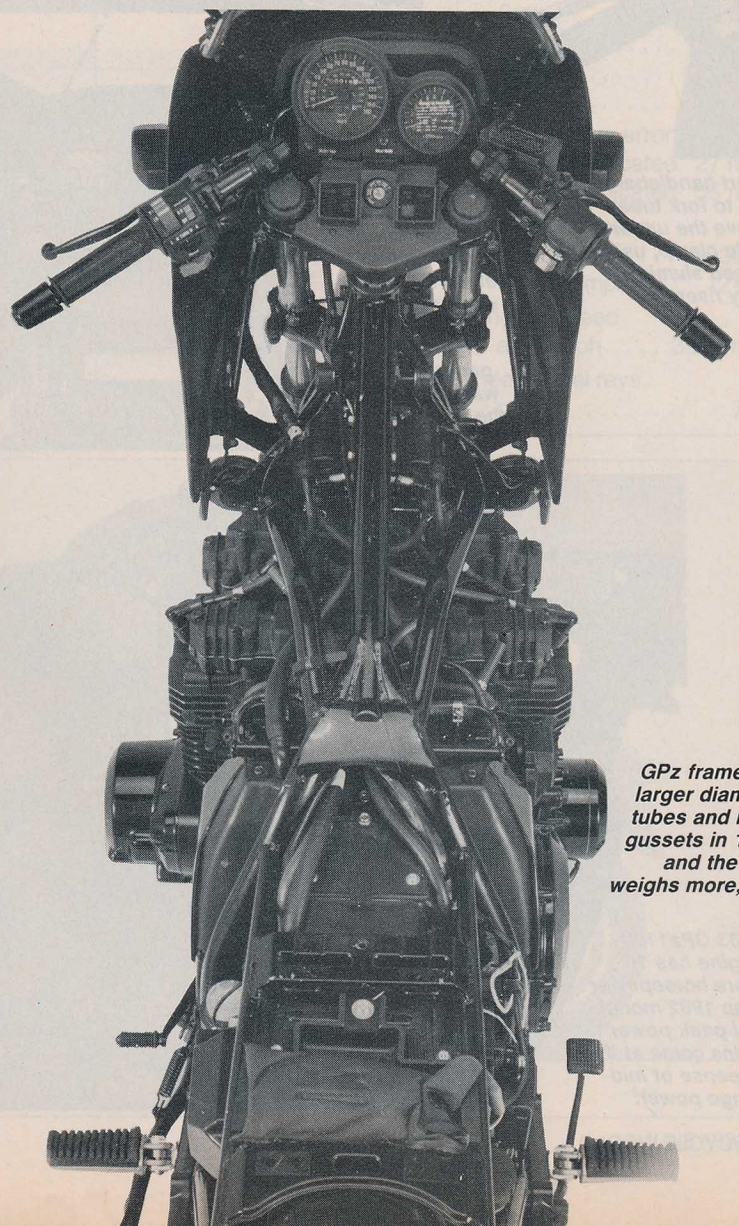
Long wheelbase usually means less cornering clearance, but the Kawasaki's designers have done an excellent job of tucking in the exhaust system and stands. The first things to drag are the footpegs, and even touching the pegs demands serious lean. The centerstand feet start skimming a bit after the pegs, and, if the stand is removed, the alternator cover on the left will touch the pavement, as well the sidestand warning light switch, while the exhaust pipes remain untouched. We never did ground anything other than the footpegs on the right side.

The seat is comfortable, but the seating position, being a semi-crouch, is best at very high speeds. Long periods of time around town or in highway traffic are hard on the rider's arms and wrists. The GPz's engine is rubber mounted in the front, but at lower rpm vibrates more than any other Four of recent memory.

The GPz is a fast motorcycle, a fact getting considerable attention in Kawasaki's promotion campaign. The company set out to make this the quickest and fastest street bike on the market, counting on measures like the 10 extra horsepower and the wider rear tire to get the bike deep into the 10-sec. bracket at the dragstrip.

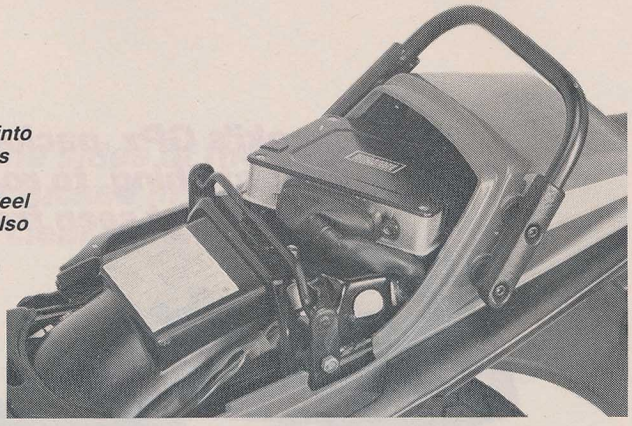
Unfortunately real-life testing didn't follow the script. The GPz1100 is the most difficult of the latest crop of fast 1100s to ride at the dragstrip, thanks to its lack of mid-range power. Hard launches are a matter of walking a tightrope between bogging and spinning the rear tire, and the rider must slip the clutch a long way in first gear. Our test bike's clutch overheated quickly, and the bike refused to shift into second gear on three consecutive passes. We made eight passes, and all but two were aborted by missing second gear or spinning the rear tire. The best of the two complete passes took 11.22 sec. with a terminal speed of 120.80 mph, slower than the times recorded by the same rider at the same dragstrip with a Honda

Kawasaki's GPz package is the closest thing to road racing styling yet seen from Japan.

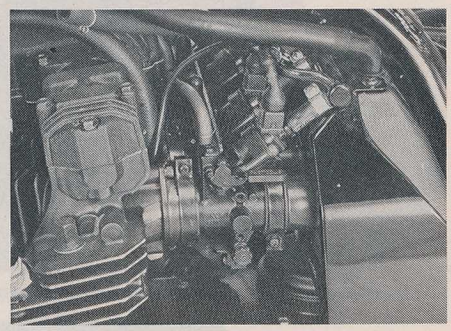


GPz frame has larger diameter tubes and more gussets in 1983, and the bike weighs more, too.

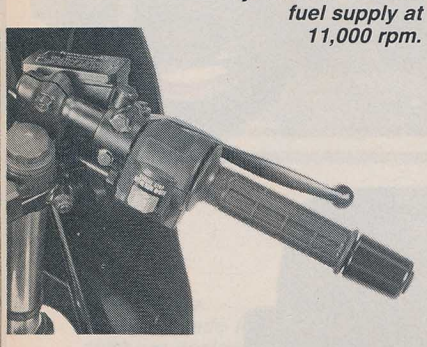
Detail photos by Kirk Willis



Fuel injection control box fits into tailsection and is protected by a cast-iron-and-steel roll bar, which also serves as a passenger grab rail.

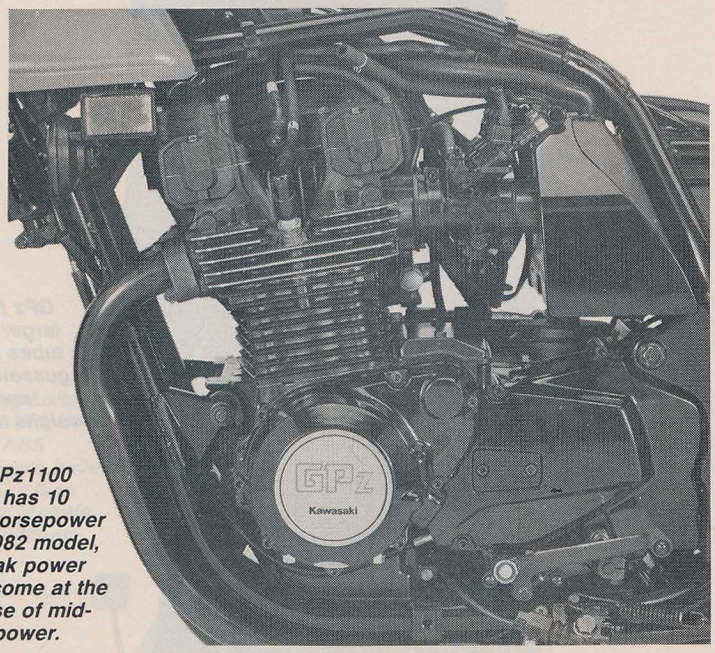


Mikuni injectors meter fuel into the intake ports and are controlled by a black box. The system cuts off the fuel supply at 11,000 rpm.



Short handlebars clip to fork tubes above the upper triple clamp, using forged aluminum alloy risers.

GPz instruments include speedometer and tach mounted between the bars, warning lights on the upper triple clamp, and fuel gauge and more warning lights on the top of the gas tank.



1983 GPz1100 engine has 10 more horsepower than 1982 model, but peak power gains come at the expense of mid-range power.

CB1100F (11.13 sec.), a Suzuki GS1100 Katana (11.05 sec.) and a Honda V65 (11.07 sec.).

The performance of a production GPz1100 borrowed for comparison was comparable. A more dramatic indication of the GPz1100's powerband is shown by top-gear roll-ons. The Kawasaki takes 4.1 sec. to accelerate from 40 to 60 mph, and 4.2 sec. to go from 60 to 80 mph. Not until the GPz hits 90 mph is it in the powerband, even though its gearing is comparable to other 1100 cc bikes. The Suzuki Katana is geared slightly taller than the Kawasaki, but has times of 3.2 and 3.6 sec. for 40 to 60 and 60 to 80 acceleration. Honda's CB1100F is nearly as quick with 3.2 and 3.7 sec., and even the much taller geared Honda V65 has times of 4.2 and 3.6 sec.

While the latest GPz1100 has more power than its predecessors, the extra power gained at the top has no real benefit on the street, and the loss of low and mid-range power eliminates the very reason most 1100s are so much fun to ride—instant, low-rpm lunge. Much of the appeal of an 1100 is its ability to leap forward at the slightest touch of the throttle, to charge from a stoplight and leave everything else behind while never exceeding 4000 rpm, to whistle past long lines of traffic the instant the throttle is opened in fifth gear, no downshifts needed.

The GPz1100 has, instead, the powerband of a normal 550 Four, failing to produce a normal 1100 rush below 5000 rpm. In serious high-speed work, as on the racetrack, the Kawasaki must be kept above 7000 to 7500 rpm to produce good drives off the corner, feeling anemic and losing ground to Suzukis and Hondas and 1982 GPz1100s below that rpm.

There is a bright spot in the GPz's performance, and that is the fuel injection. It is brilliant. Throttle response is instantaneous, putting the best carburetors to shame, and it works cold or hot. There's no CV-style surge at steady, small throttle openings, no hesitation, no waiting. The only problems involve the linkage and the cold starting characteristics. The throttle must be turned farther than we'd like, and the return spring could offer less resistance. And when the Kawasaki is cold, a fast idle lever must be used for several miles or else the engine dies at idle. Even when hot the idle speed varies more than normal, but at least the idle screw is conveniently located out in the open, on the lefthand side of the bike.

Fuel consumption varied from 40 mpg on the *Cycle World* mileage loop to 24 mpg in 78 miles of racetrack running. The gas tank is smaller this year, 5.4 gal. to 1982's 5.6 gal., and range to reserve under normal conditions is 192 mi.

Perhaps because Kawasaki's big bikes have always had such impressive performance and have earned their reputation as the horsepower kings, the GPz is in some ways disappointing. It looks fast and flashy and of course it *is* fast and flashy. No rider trading up from a KZ440 or KZ650 can be other than thrilled and impressed.

But. Comparatively speaking the GPz1100 is a victim of circumstances. Usable power at low rpm has been traded for peak power that's harder to use and control. The dramatic styling has made it less satisfying in daily use.

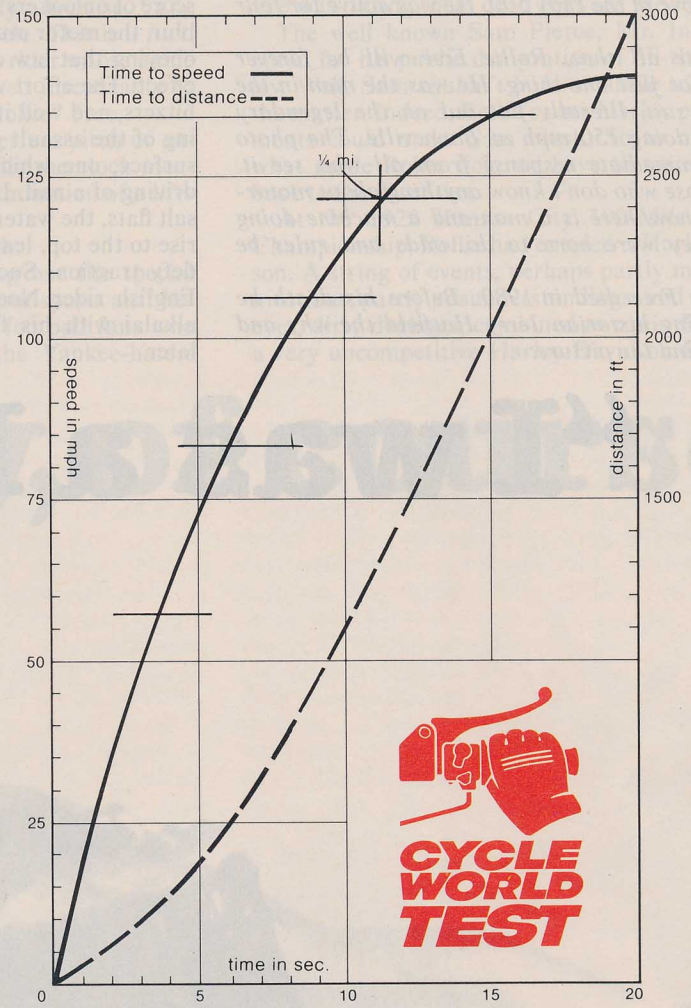
The GPz1100 is the direct descendent of the machine that started the superbike trend, yet it finds itself outplayed at its own game. ◙

KAWASAKI GPz1100

SPECIFICATIONS

List price $4499
Engine . . . . dohc air-cooled Four
Bore x stroke .72.5 x 66mm
Displacement 1089cc
Compression ratio . . . 9.5:1
Carburetion . . . . digital fuel injection
Air filter . . . . . foam
Ignition . . . . . electronic
Claimed power . 120 bhp @ 8750 rpm
Claimed torque . 74 lb.-ft. @ 8000 rpm
Lubrication . . . . . wet sump
Oil capacity . . . . . 3.9 qt.
Fuel capacity . . . . . 5.4 gal.
Starter . . . . . electric
Electrical power . . 280w @ 8000 rpm
Battery 12v 16ah
Headlight 60/55w
Primary drive . . straight-cut gear
Clutch . . . . multi-plate wet
Final drive . 630 O-ring chain
Gear ratios, overall: 1
5th 4.92
4th 5,58
3rd 6.73
2nd 8.68
1st 12.51
Suspension:
Front . . . .telescopic forks
travel . . . . . 4.3 in.
Rear . single shock swing arm
travel . . . . . 5.9 in.
Tires:
Front . . 110/90-18 Dunlop F11TL
Rear . . 130/90-17 Dunlop K127TL
Brakes
Front . . . dual 11-in. discs
Rear . . . . . 10.6-in. disc
Brake swept area 234 sq. in.
Brake loading (160lb. rider) . . . . . 3.2 lb./sq. in.
Wheelbase . . . . . 61.6 in.
Rake/Trail . . . . . .29°/5.1 in.
Handlebar width . . . . .26 in.
Seat height . . . . . 31.5 in.
Seat width . . . . . .10 in.
Footpeg height . . . . 13.9 in.
Ground clearance . . . 5.7 in.
Test weight (w/half-tank fuel) . .578 lb.
Weight bias, % front/rear 48/52
GVWR . . . . . .933 lb.
Load capacity . . . . .355 lb.

ACCELERATION



PERFORMANCE

Standing ¼-mile . 11.22 sec. @ 120.80 mph
Top speed in ½-mile 139 mph
Fuel consumption . . 40 mpg
Range (to reserve tank) . 192 mi.
Acceleration:
0–30 mph . . . . . 1.8 sec.
0–40 mph . . . . . 2.6 sec.
0–50 mph . . . . . 3.4 sec.
0–60 mph . . . . . 4.2 sec.
0–70 mph . . . . . 5.1 sec.
0–80 mph . . . . . 6.0 sec.
0–90 mph . . . . . 7.0 sec.
0–100 mph . . . . . 8.1 sec.
Top gear acceleration:
40–60 mph . . . . . 4.1 sec.
60–80 mph . . . . . 4.2 sec.
Calculated speed in gears @ 9500 rpm:
1st . . . . . 57 mph
2nd . . . . . 83 mph
3rd . . . . . 106 mph
4th . . . . . 128 mph
5th . . . . . 146 mph
Speedometer error:
30 mph indicated 27 mph
60 mph indicated 55 mph
Braking distance:
from 30 mph . . . . . 30 ft.
from 60 mph . . . . . 124 ft.
Engine speed at 60 mph . . . . 3920 rpm
Rear wheel revs. per mi. 797