

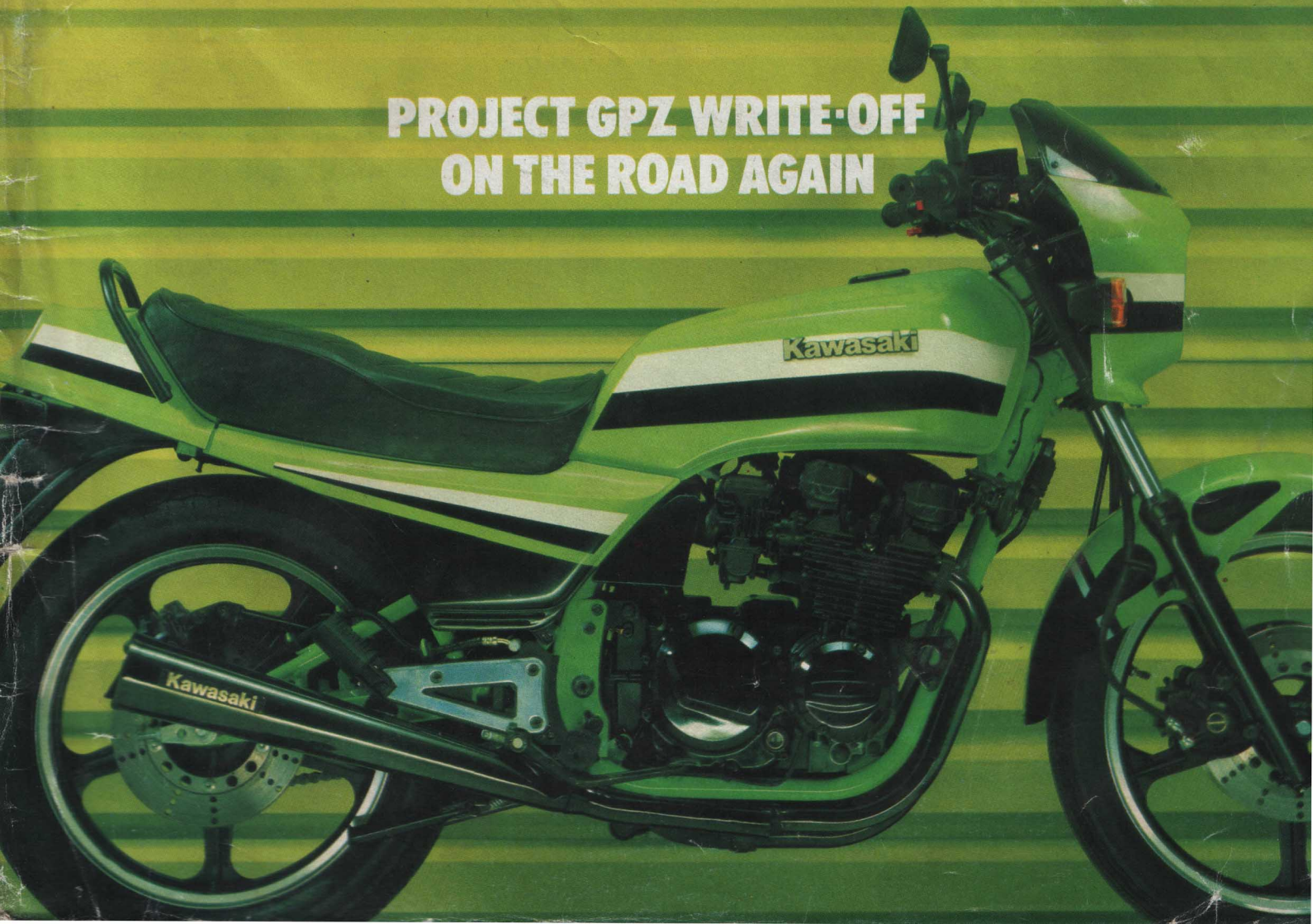
MECHANICS

& THE BIKER

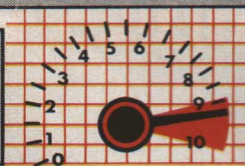
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CHROME PLATING Preparation & finish
DIRTY TEST MTX 125 v DT 125 LC
FAST TEST Suzuki GSX 750 EC
PASTA TEST Ducati 900 S2

**PROJECT GPZ WRITE-OFF
ON THE ROAD AGAIN**



RED LINING



Last of the Japanese manufacturers to launch their turbo, Kawasaki have at least had the advantage of being able to see what has gone before. From the reactions to other turbos they have had the opportunity to build in more desirable features per square inch than any of the other bike makers.

Being last also carries the risk of missing the market altogether and this is probably Kawasaki's biggest reason for building a turbo; they can't afford not to have one. There are other reasons — it may turn out to be an important development, in which case all of the manufacturers need to get in at the beginning and build up the experience which will be essential if a second generation of turbos ever appears.

Meanwhile it is still an unusual feature and one which must have much attraction for those who are conscious of styling, gimmicks and the general haze of technological whizz-bangery — a subject which the Japanese have not neglected.

There are also arguments against turbos, namely that the cost and complication must lead to a dead end, that the ultimate power is unnecessary or is available as easily from conventional motors, and that turbos so far have not had a

Z·X·750·E-1 I·N·S·C·R·U·T·A·B·L·Y L·A·S·T
B·U·T N·O·T L·E·A·S·T



noticeably favourable reception.

Consequently, in its three years of development, the Kawasaki has had some fairly radical changes. The factory decided that performance was the main objective and the original 650 soon grew into a 750 — the bigger engine

offering more tractability and being easier to match to current turbines. The type chosen was a small rotor Hitachi but there are several ways of using a turbo charger.

One is to use a lot of boost — which gives good bottom end power but which needs a low compression engine to avoid knock and with present equipment results in poor turbocharging at high speed. That's according to Honda who opted to go that way, using 17 to 19 lb/in² boost and a 7.2:1 compression ratio.

At the other extreme, high compression and low boost does not give power or economy in the low- and middle-speed ranges. Yamaha, who use 8.2:1 pistons and 7 to 8 lb/in² boost had their turbo criticised for not doing very much at all.

Kawasaki have pitched their turbo for top end performance, hence the need for the bigger engine to maintain the bottom end. They run 10 to 11 lb/in² boost with 7.8:1 compression — midway between Honda and Yamaha, and it does seem to work as planned.

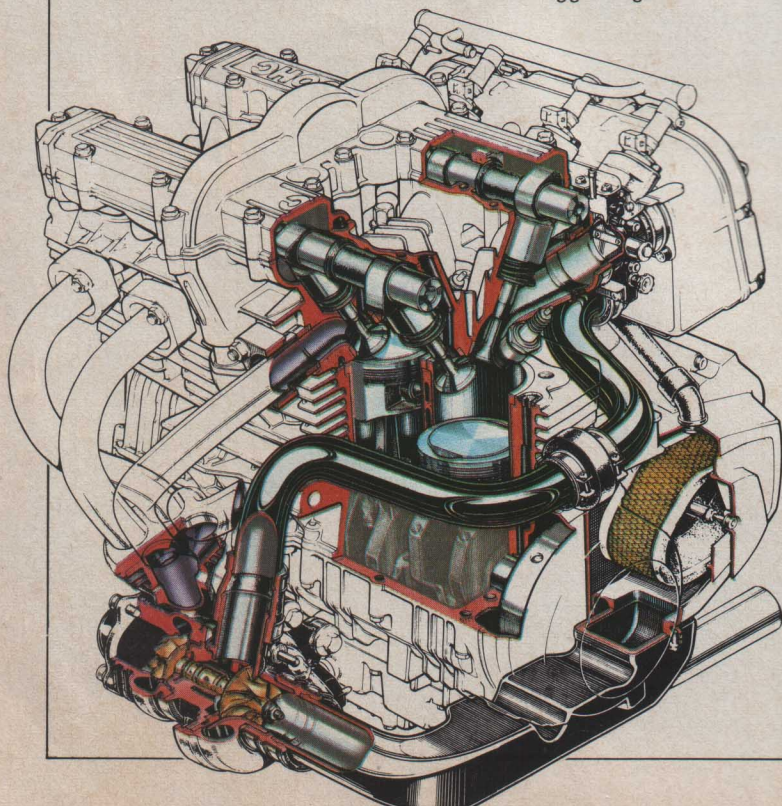
The word "seem" is

Short header pipes are meant to give quick turbine response; narrow ports also raise the gas speed. The head is the Z650's two-valve hemi.

High spec chassis parts gave the Turbo good ride and handling.
Pic: Richard Francis.

necessary because Kawasaki launched the turbo at Salzburgring, a fast circuit with the kind of sweeping bends which make you roll the throttle on and off — in other words a place which suits the characteristics of a turbo pretty well. It may be significant that the only sharp, 90-degree bend was the place where all of the day's crashes happened. And, although there were 750 and 1100 GPz models for comparison, it was the turbos which were crashed. In fairness we ought to add that this particular corner had a sand trap and was the only place where the circuit wasn't narrowly lined with forbidding Armco; the riders certainly felt less inhibited here.

From this brief test it appeared that the Kawasaki was faster than the Yamaha and either faster or easier to use than the Honda 650 turbo. We don't have any reliable data on the Suzuki. It is debatable whether the Kawasaki is noticeably faster than the Honda; it has a totally different riding position and layout which makes it easier to ride fast and use the power. From a purely subjective angle, I'd say it felt faster — certainly I was



happier to ride it under race track conditions.

However, Kawasaki had laid on some standing quarters (400m actually, the difference is less than 8 feet) and although they said their rider had seen 10.7 seconds, the best that was managed on the day was 11.2 seconds, including some runs by American journalists who put a lot of importance on these figures. This is still significantly quicker than the CX650T tested in this issue, with enough of a margin to allow for different conditions, etc.

The only direct comparisons were with the GPz1100; overall lap speeds were about the same, the 750 Turbo feeling lighter but a little less stable, and the 1100 having the edge on top end performance. Fifth gear roll-on tests showed that the 1100 was quicker from very low speeds, but the 750 pulled ahead when the tests were started from 45 mph or more.

These comparisons agree with Kawasaki's claimed power figures which show the Turbo to have up to 12 per cent more power than the 1100 in the region between 3500 and 7200 rpm. From there on the 1100 wins, with some 7 per cent more power at peak speed.

The factory's claim of 112 PS at 9000 for the Turbo (and 120 PS for the 1100) seem to be a trifle exaggerated. The "100 bhp" German spec models didn't seem to be that much slower . . .

Their claimed top speed of 146 mph is rather more believable, especially as they seem to have done a lot of wind-tunnel work with the fairing.

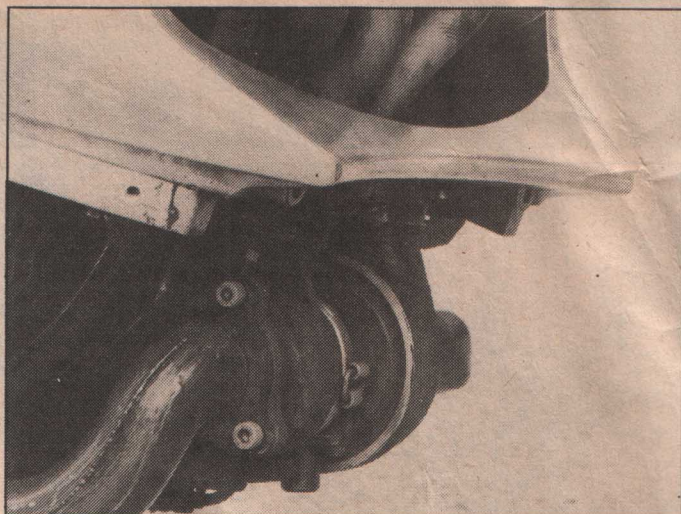
Further factory claims, that the bike is "docile and dominant" are also reasonable; it is both flexible and very rapid, the turbo seems to be well engineered enough not to be noticeable and there is nothing to tell the rider he is not sitting on a larger capacity, high performance machine.

Of course, the more turbo

effect there is, the more you are likely to notice any imperfections and in this respect, Kawasaki have got a pretty good compromise. To get the fastest response from the turbine, they need to get very short routes for both the exhaust and the intake gases. This is the one advantage of Honda's V-twin — putting everything in the angle of the V gives the shortest possible exhaust and intake.

A straight four does not lend itself to a turbo installation. Using fuel injectors helps, and Kawasaki have had several years of practice with these. They decided to go for very short header pipes and put the turbine in front of the engine, which obviously makes a lengthy intake path. This starts at the air cleaner, which is mounted just outboard of the gearbox sprocket, leading directly to the compressor. From here the pressurised charge is ducted around the engine and into a surge tank which sits where the air box is usually found, leading from here into the four injector nozzles.

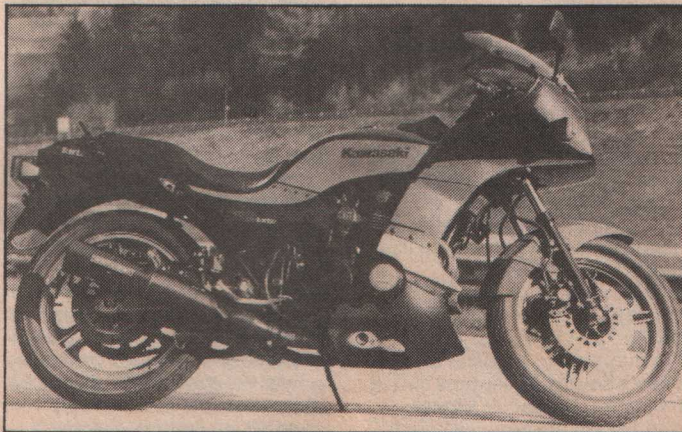
The injection system is similar to Kawasaki's later GPz1100, sensing throttle position, air pressure and temperature, engine speed and temperature. Avoiding excess complication was one of



The alloy "spoiler" has no aerodynamic function but braces the fairing and makes life easier for the stylists.

Kawasaki's aims and they have omitted reed valve by-passes, and knock sensors. There is a wastegate on the turbo and, if maximum boost is exceeded, the injector system shuts down.

The motor closely follows the ordinary 750, but uses heavier, stronger pistons. There is no oil spray on to the pistons. It has the head from the 650, a 2-valve hemi, which gives less compression than the 750 and because of this and its shape, is



less likely to cause knocking.

Although the ports and exhaust pipes are of smaller diameter, to raise the gas velocity and give faster response, the valves are the same size and material as the Z650. The cam timing is mild, with 30 degrees less intake duration than the 750 and 1.0 mm less lift.

The gear ratios have been rearranged slightly and the primary reduction is higher to reduce the torque put through the clutch which has also been strengthened. The overall gearing is higher.

Kawasaki were obviously able to use the other Turbos as targets for their own

specification, so it isn't surprising to find that their machine is lighter than the others. At 233 kg dry it is 11 kg less than the big GPz and 14 kg more than the 750.

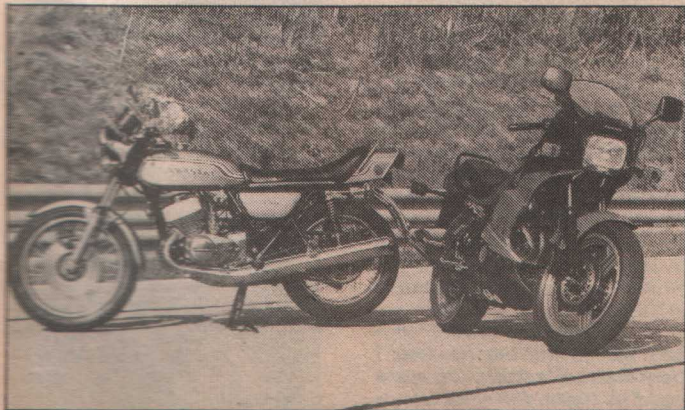
Like the others it has the high sort of specification which you'd expect in a limited production run. There are high pressure die-cast wheels which are more rigid yet lighter than the usual type. The rear swing arm is an aluminium extrusion. The inner links of the drive chain have cutaways to reduce the mass of the chain.

There is 20 mm less stroke on the front forks, to maintain clearance at the front of the engine, and consequently stiffer springs are fitted. Stronger anti-dive damping is used, with brakes from the 1100. The rear linkage is revised to give more leverage, allowing a shorter spring unit to be fitted and giving a seat some 10 mm lower than the 750.

Michelin M48 and A48 tyres are carried on the 18 inch wheels which, while giving good steering, proved to be far more sensitive to surface irregularities than the Japanese tyres fitted to the GPz machines.

The overall result of this is a big improvement in the quality of the ride and suspension. It was enough to make the GPz 750 feel crude and sloppy in comparison. It also creates a very favourable setting in which to display the turbocharged motor. The question of whether they would maintain this high standard in full production remains unanswered.

An even bigger question is: will it get into full production? And if so, how much will it cost? At the launch, Kawasaki UK did not know whether they would be importing the bike at all, or what the price would be. Kawasaki Japan need to keep abreast of new developments and they need a Turbo in their catalogues. But that doesn't mean they need to sell any. JR



Ten years of development . . . the "fiery" H2 triple felt small and rather tame in comparison with the ZX turbo.