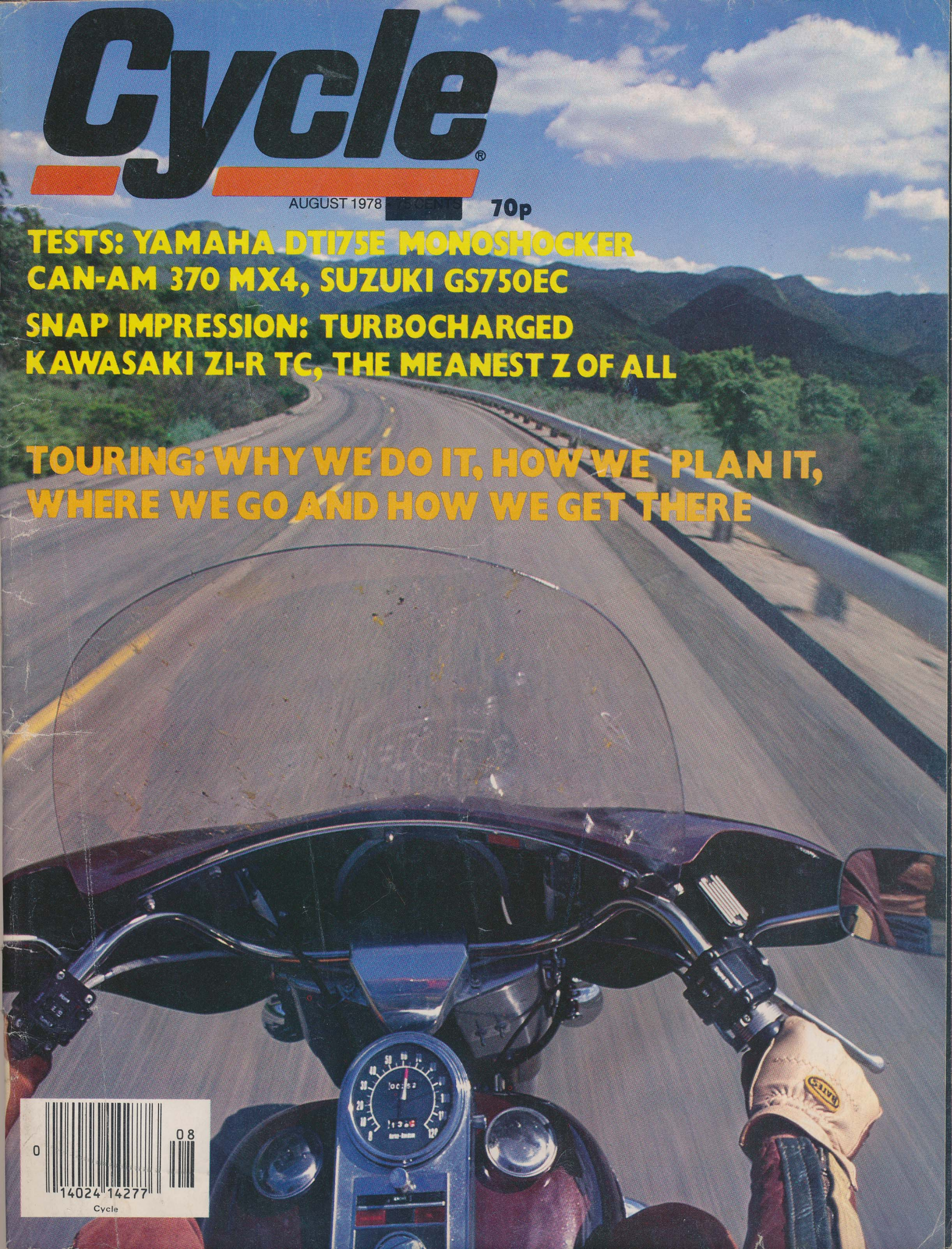
Cycle®

AUGUST 1978 75 CENTS 70p

TESTS: YAMAHA DT175E MONOSHOCKER CAN-AM 370 MX4, SUZUKI GS750EC

SNAP IMPRESSION: TURBOCHARGED KAWASAKI ZI-R TC, THE MEANEST Z OF ALL

TOURING: WHY WE DO IT, HOW WE PLAN IT, WHERE WE GO AND HOW WE GET THERE



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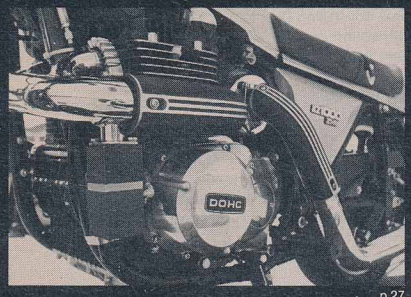

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This Month's Cover: Cycle *presents its You-Are-There Touring Cover. You're on a Harley-Davidson FLH-80, and yes, you are speeding. Complainers should consider taking it up with St. Joan of Claymore. That's an inside joke, literally, so see page 8. Cycle's touring features begin on page 50. Photographic evidence of our highway perpetration has been provided by Robin Riggs.*

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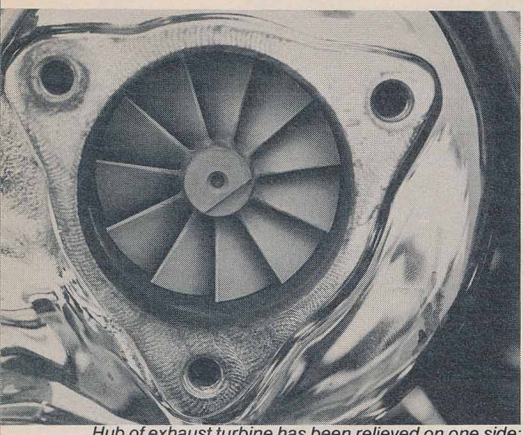
The Whispering Beast

Former Kawasaki executive Allen Masek, American Turbo-Pak, Turbo Cycle Inc. and Rajay Industries have banded together to produce the fastest device ever to be sold off a dealer's showroom floor. So what if it doesn't have a warranty?

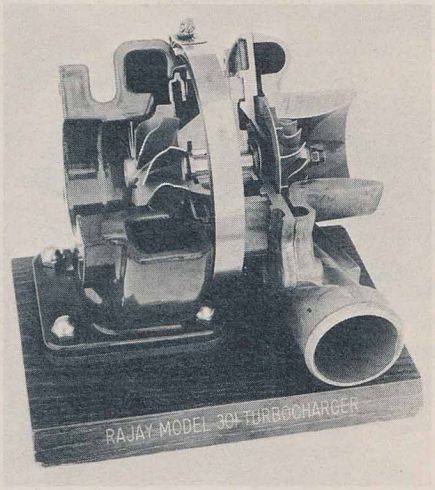
By Cook Neilson

PHOTOGRAPHY: ROBIN RIGGS

Whispering Beast



Hub of exhaust turbine has been relieved on one side; this is done for balance. Assembly is safe to 10,000 rpm.



● TO UNDERSTAND THE KAWASAKI Z1-R TC, you must first understand the events which led to its existence:

Fall, 1972: Motorcycle press tests the brand new 903cc Kawasaki Z-1. Bike runs 12.5 seconds elapsed time in quarter-mile with a terminal speed of 107.52 mph. Is pronounced "King Motorcycle."

Late summer, 1975: Now called the Z1-B, the King's quarter-mile ET has improved to 12.37.

February, 1976: The first Z1-R mock-up is constructed.

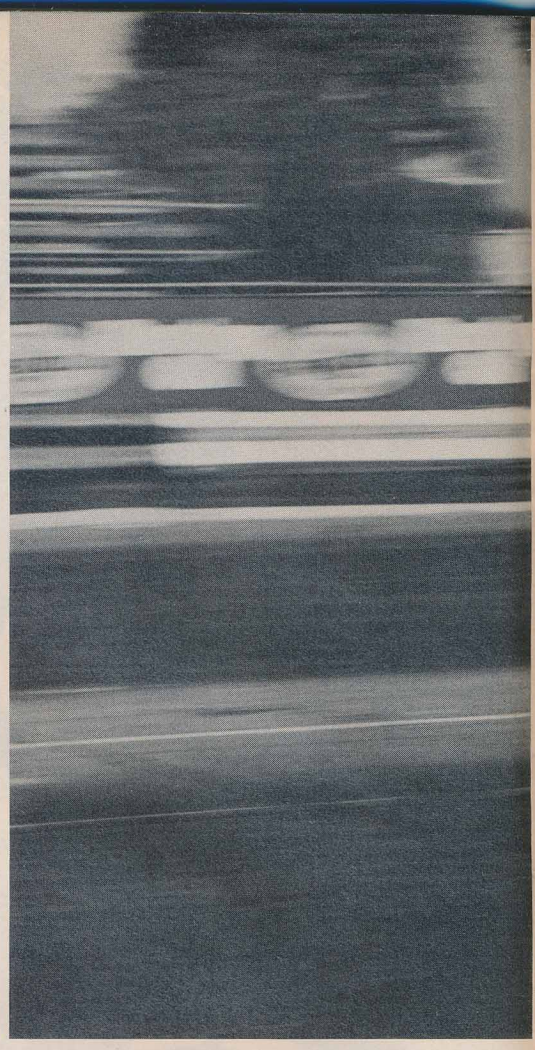
May, 1976: Decision made to go forward with Z1-R concept; final specifications are written.

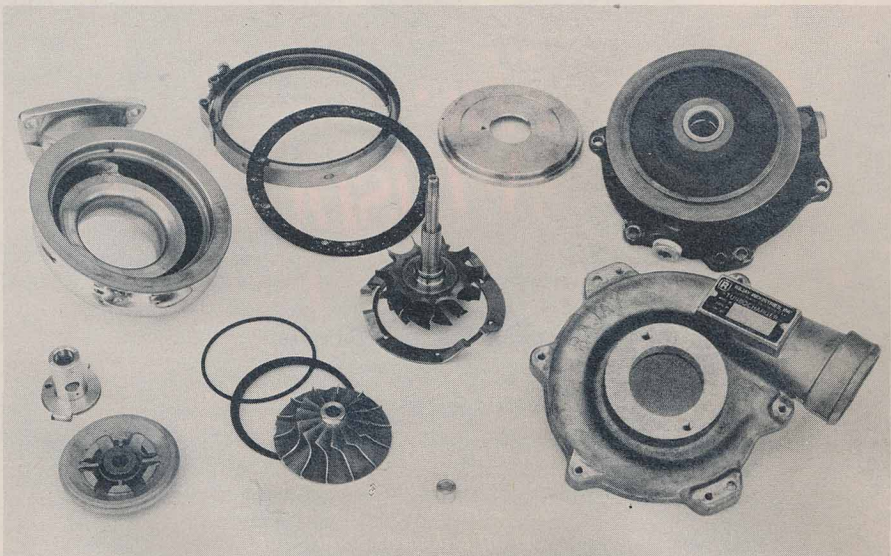
February, 1977: Kawasaki KZ1000 tested; now 1015cc in displacement, KZ returns quarter-mile figures of 12.06 at 111.66 mph. *Cycle* Magazine test concludes, ". . . riding one of their big fours means never having to be sorry there's not more power."

September, 1977: Kawasaki Z1-R released to the press for photography and test riding.

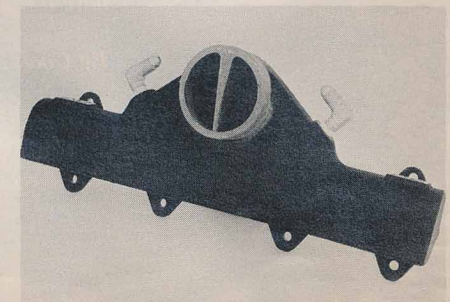
Later in September, 1977: Ads sent to the magazines proclaiming that the Z1-R has 90 horsepower.

Still later in September, 1977: Kawasaki Executive Graham Kirk receives notification from the factory that the Z1-R does not in fact have 90 hp; it has about the same as a standard KZ1000. Kirk, one of the Americans most responsible for the Z1-R, is hearing this for the first time.





Rajay turbocharger has developed a reputation for reliability; the turbo unit's simplicity is partially responsible.



Inlet port splitter improves manifold distribution. Fittings carry pressure to the gauge and waste gate.

October, 1977: Z1-R goes to the drag strip and returns ETs of 11.96 and 11.95, becoming the first sub-twelve-second stocker in history.

November, 1977: Yamaha XS11 is introduced to the press; the Kawasaki Z, for the first time since 1972, is not the King; it is Number Two in a field of two.

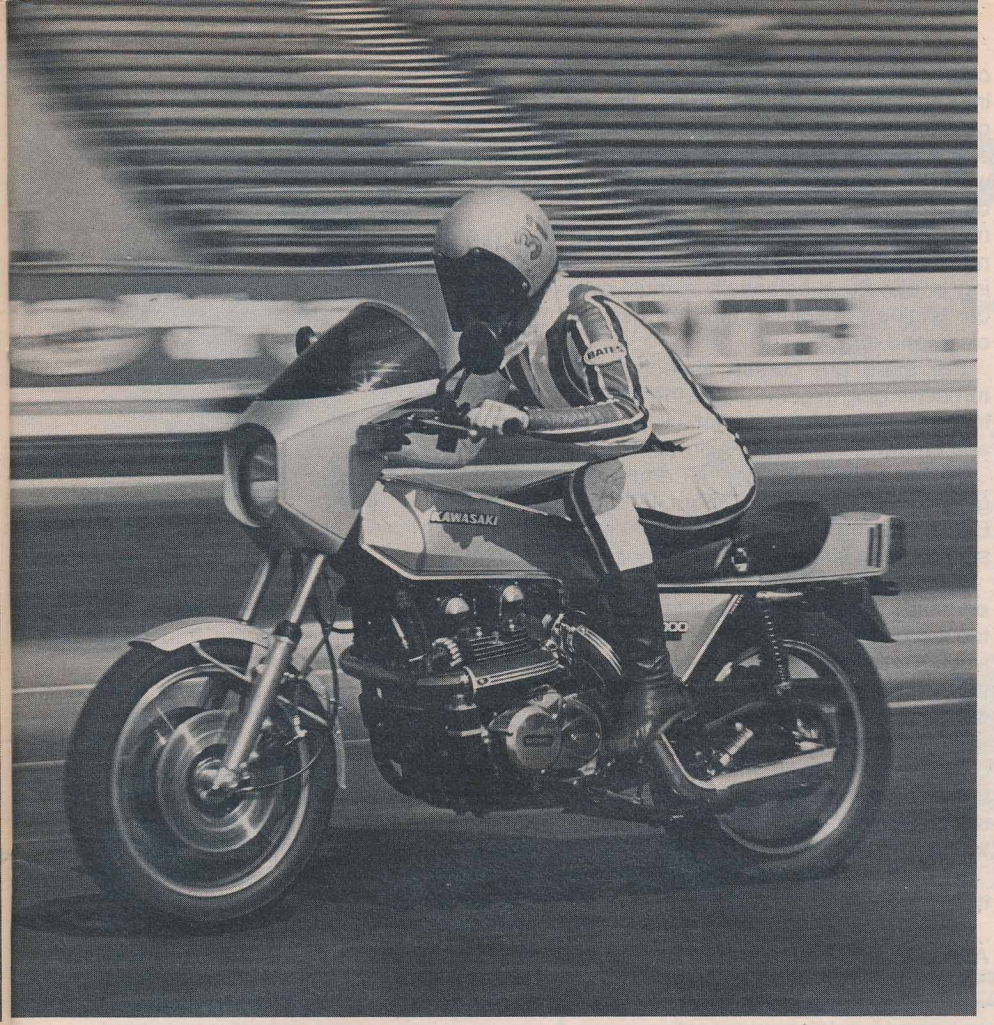
December, 1977: Honda CBX Six is introduced to the press. Kawasaki is Number Three in a field of three.

January, 1978: Suzuki GS1000 is introduced to the press. Kawasaki is Number Four in a field of four.

Of course this order has only to do with quarter-mile performance, and while there are those who believe quarter-mile performance ranks above only such things as taillight bulb design and sump finning as an important criterion of value, Kawasaki and their faithful feel otherwise. The mighty Z got a long way on the basis of its acceleration supremacy; while the acceleration remained, the supremacy did not.

How to improve the one sufficiently to recapture the other, while giving away displacement and cylinder count to the Honda and the Yamaha and weight to the Suzuki?

This question was in the process of being resolved even before the three other Superbikes made themselves



known. A year ago the turbocharged Z1-R TC was a project, inspired by KMC's Wayne Moulton, that the American distributorship was contemplating for itself. But the project was shelved. For whatever reason the Kawasaki factory or distributorship did not want to expose itself to this particular line of fire.

But hark! Here's Allen Masek, for eleven years a loyal Kawasaki executive, a man generally accepted as the highest-ranking non-Japanese at the American distributorship, a man whose family has been directly involved with the fortunes of Kawasaki since the very beginning. Kawasaki grew to prominence under Masek's guidance; Masek is a proven performer. But Masek, early in the fall of 1978, will not be in California running Kawasaki, but in Paris, where he plans to live. Masek believed in the TC project back when the distributorship was still kicking it around; he believed in it just as devoutly later, after he had officially taken his leave from Kawasaki Motor Corp.

Masek, happily, is not the kind of man who is limited to beliefs. On April 17, at the very drag strip used by the motorcycle press to discover that Kawasaki had slipped from first to fourth in the Accel-O-Derby, Masek gathered the magazine people to see what he'd brought about.

The "TC" part of the Z1-R's nomenclature stands for the obvious: turbocharged. The turbo unit itself is built by Rajay Industries, Inc., a company which manufactures turbochargers for airplanes, automobiles, boats and various vehicles powered by diesel engines. Rajay puts out over 20,000 turbochargers per year.

The rest of the plumbing is supplied by American Turbo Pak, Inc., a Santa Ana-based company originally set up by Bill Hahn and presently owned by John Gleason. ATP manufactures turbo kits for BMWs, Honda fours, Kawasaki fours and Suzuki fours and has, in the past three years, sold over 2000 turbo kits. At present, Masek plans to produce 1000 Z1-R TC Kawasakis. He will buy the standard Z1-Rs from Kawasaki; have the turbo hardware manufactured by ATP; use his own company, Turbo Cycle Corp., to install the turbocharger kits; and sell the bikes through Kawasaki dealerships. As it turns out, there is no warranty problem; there is no warranty, although Masek points out that certain components will be evaluated on an individual basis if there has been no connection between their failure and the hotted-up engine.

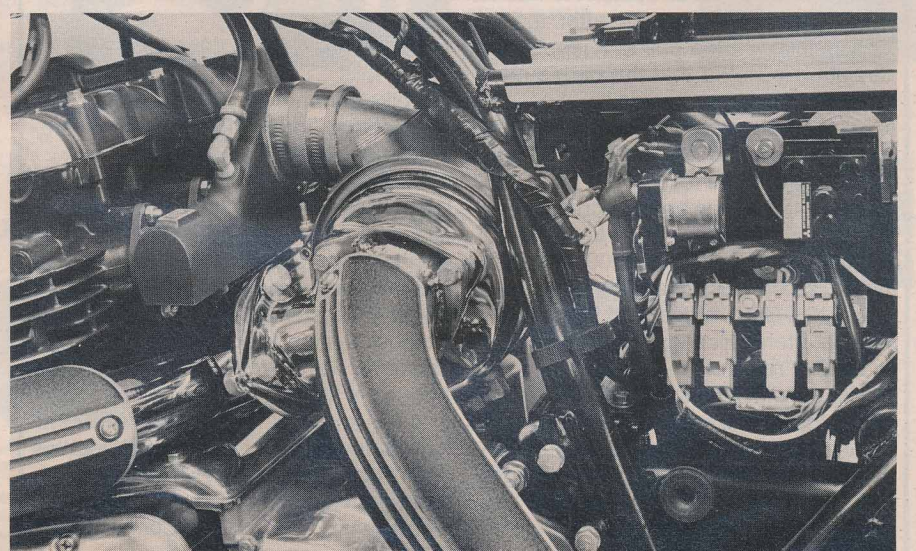
The bikes will cost $5000 each—roughly, Masek says, what you'd pay if you bought a Z1-R at full list, purchased the ATP kit and paid someone else to install it for you.

This matter of finance was one which interested each and every one of Masek's guests. For about $1100 you can ordinarily buy a KZ1000 turbo kit, and about $2600 puts you aboard a KZ1000. If you can do the installation yourself, the total price of a new turbo KZ1000 would be $4000 or less, so in effect you're paying an extra $1000 for the R-model's bodywork—the exact difference between stock versions of the same two bikes.

If you wanted to buy a Z1-R and install an ATP kit yourself, you'd be out of luck. According to John Gleason, the president of American Turbo Pak, the only Z1-R turbo kits available will be sold to Masek for installation on the TC. Furthermore, the standard KZ turbo kits do not bolt on to a Z1-R. So ultimately if you want to own a turbocharged Kawasaki Z1-R, you pay your $5000 and ride one home from your dealer's showroom.

For the money, here's what you get: a brand new Kawasaki Z1-R, and a kit which will reduce the bike's elapsed times from 11.95 to 10.85, raise its quarter-mile terminal speed from 110.25 mph to 130.62 mph and increase its power output to a figure between 105 hp and 130 hp.

We've had experience with ATP kits on Kawasaki Zs before and continue to marvel at two aspects of the turbo experience: the astonishing amount of power the en-

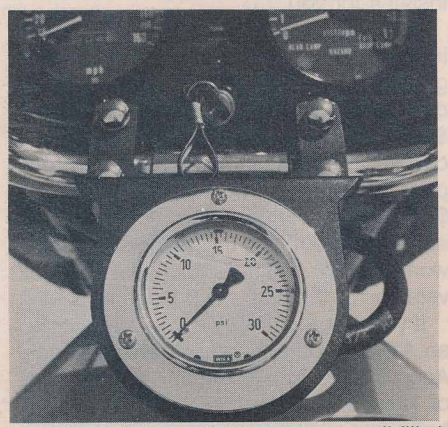


One of the most impressive aspects of the ATP kit is the ease and neatness with which it can be installed.

Whispering Beast

gine makes when it comes up on boost, and the generally sweet nature of the engine under all other circumstances. For the turbocharged Z1-R, or any other turbo-kitted motorcycle, there is no middle ground. If anyone could quarrel with turbocharging, this would reside close to the center of the complaint.

A turbocharger is an exhaust-driven centrifugal air compressor. Exhaust gases routed past the blades of a turbine force the turbine to spin. It is connected by an axle to an impeller in a separate chamber, which compresses the air/fuel inlet charge and pumps it into the engine's combustion chambers. Larger chunks of inlet charge make bigger bangs when they are ignited by the spark plugs; bigger bangs mean more power, and more power means more speed. There is no less expensive way than turbocharging to elevate substantially a multi-cylinder engine's absolute output. It's simple, clean and direct.



On test models manifold gauge was oil-filled and looked like this. It will be replaced on prod. bikes.

But there are certain aspects about turbocharging in general and the Z1-R TC in particular which are not all peaches and cream. They are as follows:

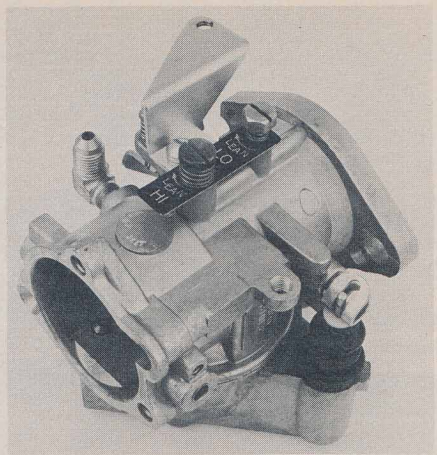
1) The turbocharged Z1-R engine begins to work seriously at about 4500 rpm. Below this figure, pulling power is the same as or a little less than the stocker's.

2) While the turbo kit has been bolted on neatly enough, there are tasks which the thorough Z1-R TC owner should consider. If he plans to ride especially hard or to race, certain crank pins should be welded in place to prevent the crankshaft from twisting.

3) The Banzai rider should give thought to modifying the Z's pan to assure that a sufficient amount of oil stays in proximity to the oil pick-up.

4) Seriously consider adding high-quality aftermarket valve and clutch springs.

5) Although for turbocharged bikes ATP recommends "the best quality suspension components" in its standard brochure, the Z1-R TC does not come that way. As with the crank welding, pan modifying and spring upgrading, a rider who plans to use the Z1-R TC to its maximum should upgrade *at least* the rear shocks.



The turbocharger is fed by this Bendix single-throat snowmobile carburetor. Main jet is adjustable.

As ridden by the press, the TCs had welded cranks, about 36 degrees of spark advance, and tanks filled with high-octane Moon gas. Everyone who rode them—including press people who had never ridden in anger down a drag strip before, and people who weighed well in excess of 200 pounds—had at least one run in the mid-elevens with terminal speeds over 120 mph. Two of the bikes were presented as they will be sold—with stock shocks and stock tires—and one was set up with struts, a Goodyear rear slick and a wheelie bar. The strip-prepared bike has run in the 10.0-second neighborhood with terminal speeds around 136 mph; because of traction problems, the best the "stockers" could do was 10.85 at 130.62 mph.

When we last looked at an American Turbo Pak Kawasaki (November, 1975), the quarter-mile figures were 11.65 at 118.73 mph. That engine displaced 903cc; the bike weighed 520 pounds. When we put it on the dynamometer, it made 102.79 bhp at 8500 rpm, troubled by fuel starvation bothers. We did not run the Z1-R TC on the dyno; however, correlating weight and terminal speed figures leads to very interesting speculation.

The Kawasaki KZ1000 that Reg Pridmore rode at Daytona weighed about 450 pounds. It produced, on C.R. Axtell's dynamometer, 130 rear-wheel horsepower. Last season its quarter-mile figures were 10.9 at 126 mph. The Z1-R TC weighs about 100 pounds *more* than the Pridmore bike and went four miles per hour *faster* in the quarter-mile. That means the TC must be making at least as much power as the Pridmore Superbike Production racer.

What's the TC like to ride? We've had experience with any number of hard-accelerating vehicles: Superbike Production racers, Suzuki RG500 square fours, Ya-

(Continued on page 95)

• Jim Richmond works across the street from *Cycle*'s Westlake Village offices. He is a Mechanical Engineer for Mafi Trench Corp., manufacturers of high-speed turbine pumps. He commutes to work aboard a 1973 Kawasaki Z-1 which, for the past year, has worn an ATP turbocharger kit. His observations on life with a blower-bike:

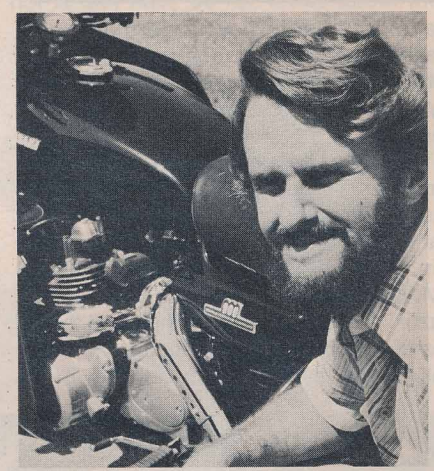
• While he purchased the kit through a motorcycle shop, he did the installation himself. It took about two days. There were no complications to speak of, although he had to find and attach special fittings to adapt the oil cooler. He had to fiddle with the carburetor after the kit was installed, but a call to ATP set him straight. He noted that the carb's main jet adjustment was "crude."

• Richmond's experience indicates that it takes seven to ten minutes to adequately warm all of the turbo's duct work. Until that has been accomplished, the bike is "unbelievably cold-blooded."

• The Z-1 goes about 2000 miles between spark plug changes. Richmond uses NGK B8ES plugs, and high-performance aftermarket ignition coils.

• His Z-1 returns 40-42 mpg.

• He specifically likes several things about the kit: the ease with which he can return his bike to stock configuration, the durability of the Rajay turbocharger, the degree to which the engine now tolerates little technical imperfections,



the bike's immense power output, and the fact that "for 99 per cent of the time, it acts just like a stocker."

• Dislikes? He says that it can load up the plugs quickly, that it frequently blows oil smoke out the tail pipe on hard deceleration, and that the rest of the bike "wasn't designed for that kind of power." He specifically cautions about exhaust system leaks, which, he says, can reduce and/or delay boost and are frequently difficult to trace.

If he knew at the outset what he knows now, would he still purchase the kit? "Absolutely. I knew what I wanted, and I got exactly what I expected."

—*Cook Neilson*

THE BEAST ..... *Continued from page 30*

maha TZ350s, factory-built snowmobile racers, Harley-Davidson Top Fuel dragsters. The street TC Kawasaki accelerates harder than all of these except the Top Fueler. Engine speed must be high when leaving the line, and the throttle must be open for the boost to be up; get all that organized properly and the TC will yank you down the strip like nothing else you've ever ridden. But the trip back up the return road is almost as astonishing: ridden moderately, the TC feels, sounds and acts a lot like a box stocker.

That sounds like the best of both worlds. Under most conditions the bike has the moderate manners it was born with; ask it to produce power and it will produce more than anything else on the street—more, under most circumstances, than you can ever hope to use.

If the TC concept is flawed in any general way, it is the substantial hole at the center of the bike's performance character. At one end of the spectrum it runs like a stocker. It idles, doesn't overheat, gets over 40 mpg and doesn't make very much noise. At the other end of the spectrum it goes so damn fast that it is at best impractical and at worst unbearable. There does not appear to be much middle ground here, middle ground being defined as a transition envelope wherein the bike produces power output that is pleasantly more robust than stock without being terrifying. The TC Kawasaki is like a switchblade: open or closed. Its performance can be adjusted by loosening up the preload on the waste gate to reduce maximum boost, but the TC's rather snappish upper-end character remains as an inescapable legacy of the turbocharger and all the ducting that goes with it.

Ultimately the potential Z1-R TC buyer is faced with a real thicket of pluses and minuses. The pluses are the tidiness of the installation, the bike's comparatively unfussy low-speed manners, the amount of development work which has gone into the complete turbo kit, the utter reliability of the Rajay unit itself, the toughness of the KZ1000 engine and the absolutely staggering amount of power the turbocharged engine produces. Minuses? No warranty, the potential necessity for additional owner improvements, the kitted engine's cold-starting cold-bloodedness, no significant mid-range torque or horsepower increase over stock, and the hereditary turbo lag, which makes going fast down a twisty road a particularly challenging proposition.

But all of these pale to insignificance when the potential buyer faces up to the only *real* question there is: does he genuinely want to go as fast as the turbocharged Kawasaki Z1-R TC can carry him? If the response is yes, then the TC is the only bike on the market that will be satisfactory. If the answer is no, then the advice must be to stay as far away from this machine as you can get. ◉

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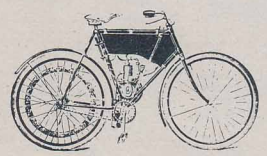
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