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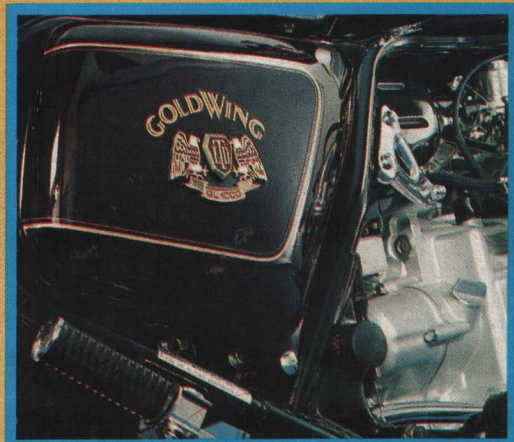


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# BLAKE'S TURBO ZED-1

## The World's Most Powerful Production Street Bolt-On For 1500 Dollars

Devours Everything In Sight  
Including Its Very Own  
Rear Tire

Text And Photos By Dave Ekins

See Rich Cox.  
See Rich Cox *before* riding  
the Turbo Z-1.



Kawasaki's Zed-One is synonymous with fast, just as turbo charging is with hp. For most of us a marriage of the two would be like hunting mice with a scattergun. But then there're those who feel fast is not fast enough and getting the bejesus scared out of them has to be an everyday occurrence just to keep the heart pumping.

Riding one of these unmuffled giants is a 'sperience one is not soon to forget. They are not really unmuffled, the turbo acts as one. In fact, it's even a spark arrester. The engine starts and idles just like a normally aspirated four-stroke. It sounds a little like a tractor while picking your way through traffic. Power feels about the same, but dyno figures show the beast to be way off pace with the stock version. You see, the thing gets going quick enough in first and second before the turbo has a chance to let you know it's there. There is some help from the pump but you don't feel it until you've got the bike under a load in the higher gears, then you *feel* it. Roadside objects start rushing by in a blur, the exhaust has ceased making anything but a hiss, and the speedo hand sweeps past the century mark like a compass needle looking for North. You don't get hit in the seat of the pants by a 4x12 traveling at mach one, it's not that kind of power. This is a sneaky power that gets you hanging on so tight you forget which direction turns the throttle off.

The highway gets narrow and corners come up so quickly that brakes and reactions built in from years of high speed riding plus freight get you through the turn. The thing accelerates so rapidly you mentally can't keep up with it.

### WHAT KIND OF A BEAST HATH BILL BLAKE WROUGHT?

The man's name is Bill Blake. He is a machinist, tool maker, engineer and inventor. He is also obsessed with making hp. Bill operates Blake Enterprises, Rt. 1, Box 403, Muskogee, Oklahoma 74401. Basically, Blake Enterprises is a motorcycle engine performance center for the Inland West populace.

The story of us and the turbo Z goes like this: Bill called us on the phone and said he could bolt-on 125 hp to a stock Z in six hours, all we had to do was furnish the Z. He also said it would run as fast as we had a straightaway for it and we all declined. We did, however, agree to bolt it on the Webco Dyno (the most widely respected hp measuring tool in these parts of the woods), knowing that at that time the best they got from any motorcycle was 103 hp out of the similar turbo Z-1. We got a Z and Bill showed up with two suitcases filled with turbo pieces and a few special wrenches he thought we didn't have.

He unpackaged more than just a turbo, its plumbing

and an exhaust system. There was a set of ignition coils, a spark advance/retard unit, and alcohol/water injection kit.

Now here's the rub. Those turbo Porsches and turbo Indy cars work on approximately 6:1 compression ratios. The turbo charging system builds compression in proportion to the amount of boost it's pushing into the inlet manifold. At some point along the way, as pressures and heat build up, detonation steps in and the engine begins to destroy itself. To control this they have a waste gate that dumps exhaust gasses upstream of the turbo at some predetermined pressure. Initially the Zed-1 gate was set to dump at 10 psi.

Bill's package does not include or demand the pistons to be replaced with lesser domed ones. Instead he has opted to build in safety devices. The advantage is an engine that performs close to the stocker during normal traffic dodging. The waste gate is the primary one. His second safety device is the spark advance/retard unit. It advances in normal fashion until 2,000 rpm and 5 psi are reached in the manifold. At that time the ignition retards 20 degrees. Bill's third safety device is the alcohol/water injection device that dumps cooling liquid upstream of the carburetor's venturi when the turbo starts reaching its 10 psi limit. This is about the time your knuckles turn white so you won't be using very large quantities of the windshield cleaning fluid.

### THE BEAST AT WORK

Heart of any turbo package is the turbo itself. This one is a cast iron housed Rayjay capable of spinning in excess of 100,000 rpm. Bill figures it is turning 75,000 rpm at 8500 engine rpm. The turbo is also pumping about 20 psi into the inlet manifold. (When gasses are compressed, the temperatures go up.) The inlet manifold is a Bill Blake designed-and-made item that offers equal breathing to the cylinders. The Rayjay gets its lubrication from the engine oil supply, which on a Z-model isn't much. The roller bearing engine, according to Bill, gets about 9 psi cold and 3 psi at running temperatures. So the oil passages within the turbo have been enlarged and smoothed for best possible lubrication.

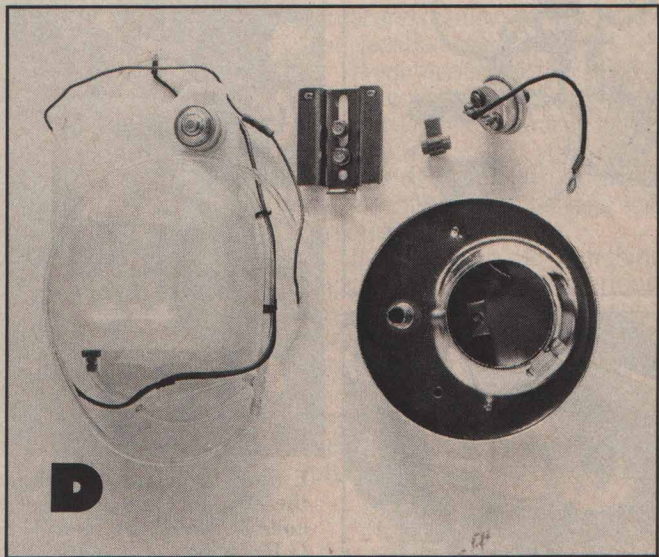
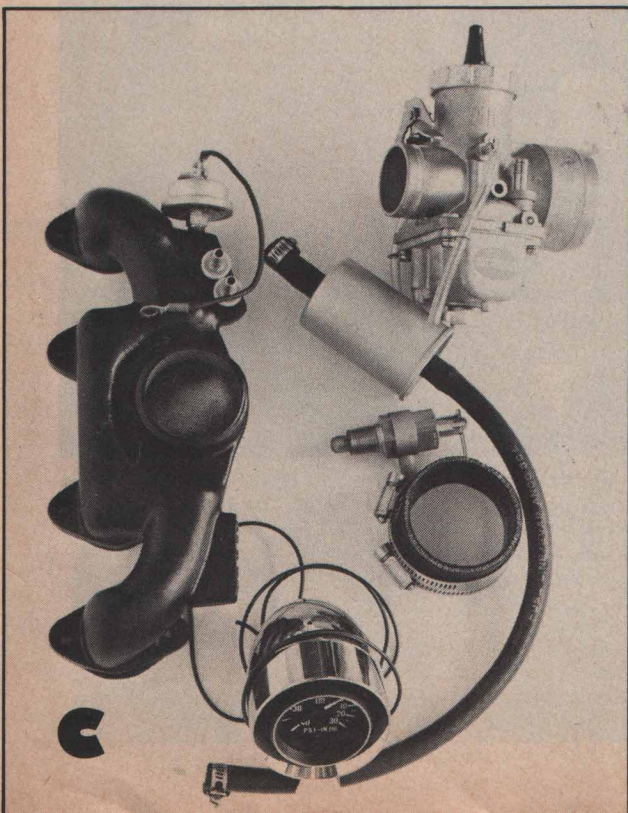
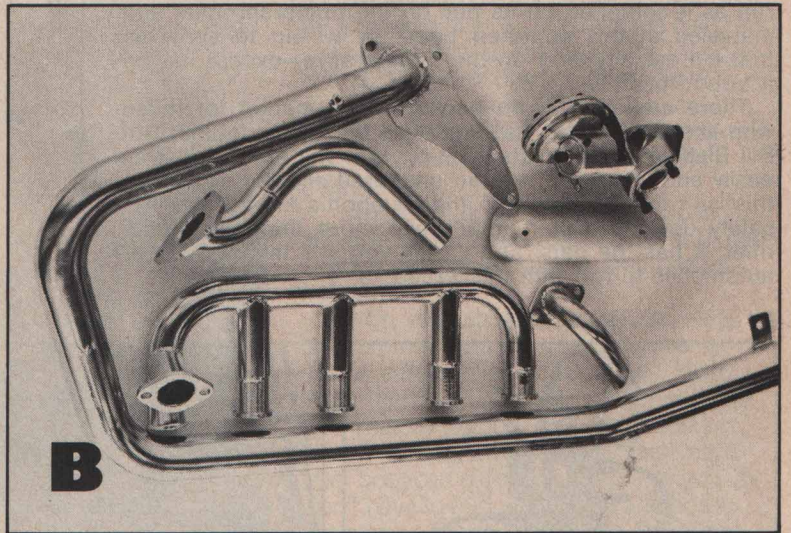
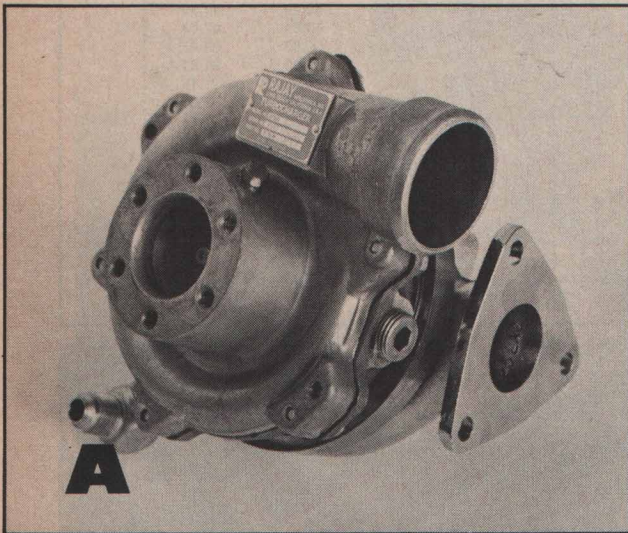
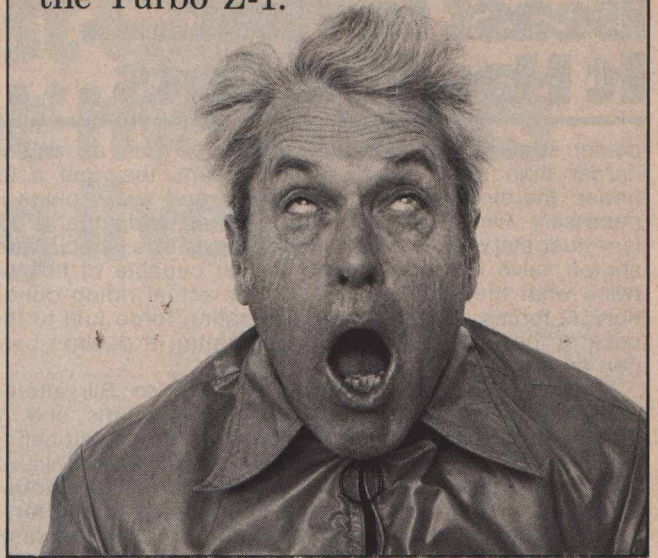
Usually, when a bike works well on the street, it should get slightly larger main jets for dyno testing. And

A Rayjay builds the smallest turbo package which is about right for Z-1 application. Heavy metal casting contains shrapnel if overspun and turbine blades disintegrate. B Complete exhaust system, heat shield and waste gate. Header spigots are machined from one piece and welded into exhaust pipe for strength and to utilize stock components. C Inlet manifold and sending unit, psi gauge, fuel line with

See Rich Cox riding the Turbo Z-1.



See Rich Cox *after* riding the Turbo Z-1.



filter, high flow shutoff valve, turbine mounting hose and clamps, and 38mm Mikuni make up inlet package. D Alcohol/water injection package is shown with back plate of air filter. Activation is automatic and controlled by sensing device shown in upper right of picture.

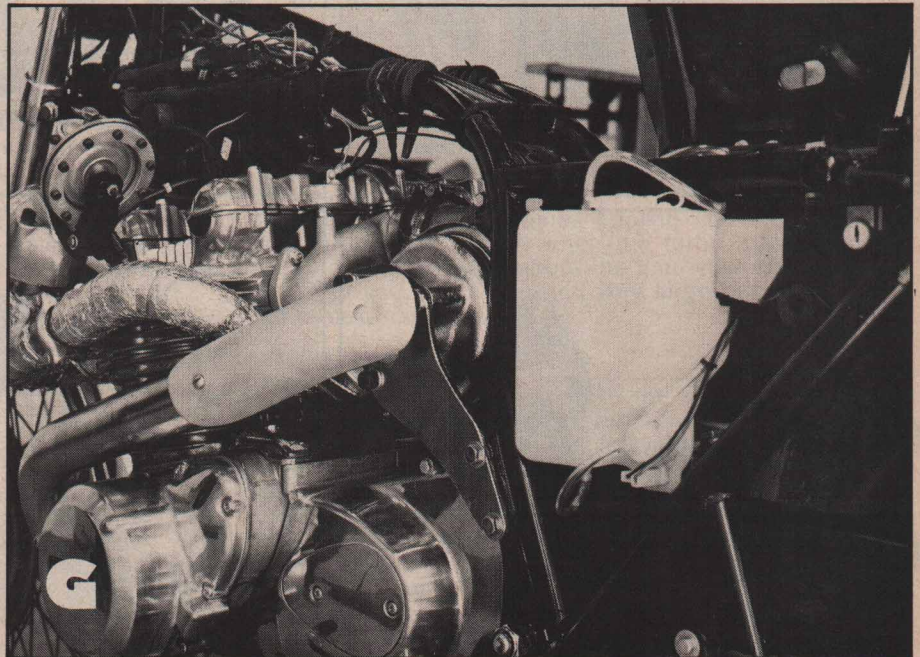
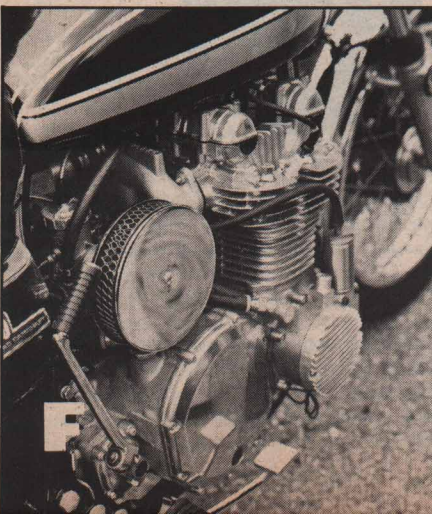
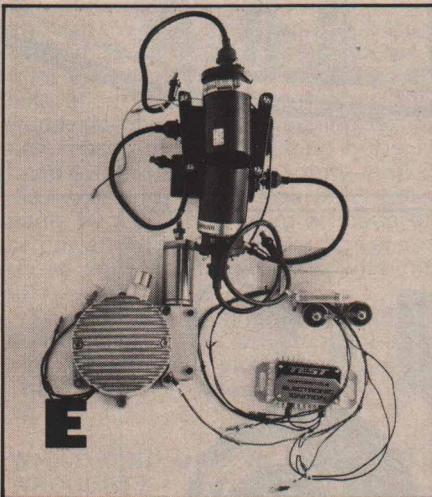
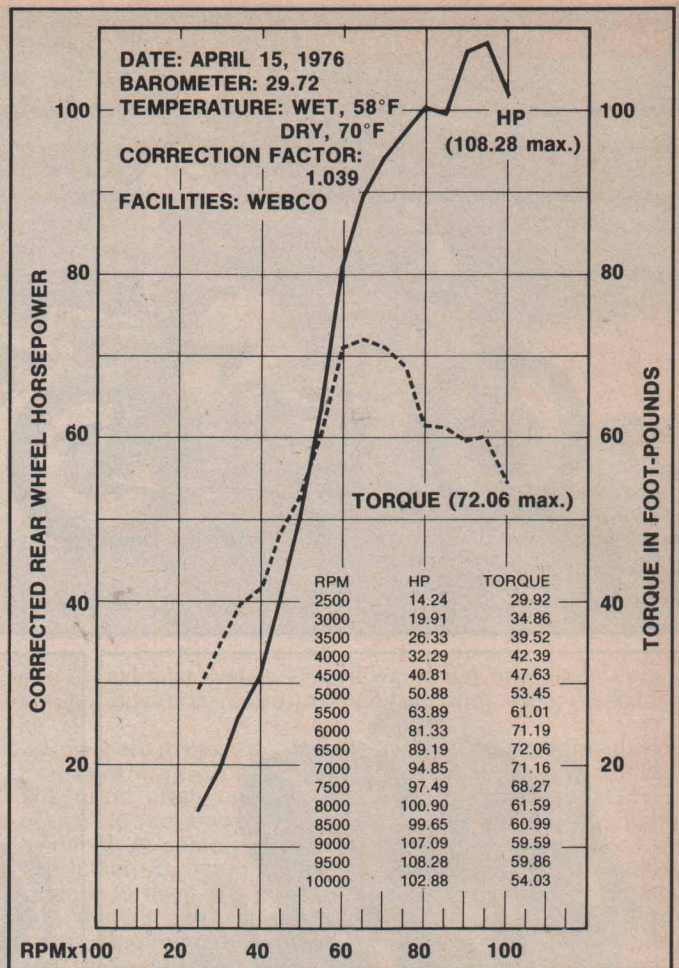
# The Beauty Of The Beast Is That... It Has The Oats...

colder spark plugs too. Dynos tend to work an engine harder than street racing which means they get a lot hotter; therefore a change in jetting and spark plugs is necessary. On the dyno Bill ran into an additional problem, fuel starvation, even when fitted with a special fuel shutoff valve that comes with the kit capable of flowing twice what the stocker does. Under actual riding conditions G forces set up when accelerating force fuel to the back of the tank and into the carburetor. It doesn't happen on the dyno.

Fuel starvation was a basic problem so Bill altered boost pressure, alcohol/water injection amounts, and ignition timing until the Zed did its best without detonating itself to death. It produced 108.28 hp at 9500 rpm with 8 psi boost pressure. A new hp record for the Webco dyno, but far from the expected 125 Bill had hoped for.

We watched the chassis twist and strain its moorings on the dyno, the Jackwall Superchain sag on the return run as it tightened up its pull on the pump sprocket and marveled at this captured beast so willing to show us that it'll eat anything on the streets alive—except maybe a turbo Porsche.

There are other turbo packs on the market for those who like to be King, and most use the Rayjay pump. But Bill Blake's unit is a true bolt-on that will bolt-off just as easily and leave you with an unaltered scooter. However, this isn't the big plus with the Oklahoma kit, it has three safety devices built-in, that's two more than the others offer. It has the oats, and I'll tell you, it'll take a \$20,000 automobile to run with this \$1500 kit.



E Stock coils and condensers don't cut it according to Bill Blake. This setup plus the advance/retard device shown in the lower left make up the ignition kit. The coils fit under the tank. F Left side with system installed and fuel tank removed. G Right side in running condition, air filter clears leg.