

Two-Wheeled TURBOS



An engine can take you from idle to the edge of frenzy in seconds. The feeling produced is called acceleration, and it seduces every hot rodder. It's both physical and emotional. Some say it's even spiritual. Acceleration jerks your arms and sweeps through your body. It hurls you forward. The harder the better. The faster the better. Acceleration reaches inside your bones with a feeling that's irresistible and addicting, and even better to experience on a motorcycle... where you are touching the very wind. That's why all four major motorcycle manufacturers build turbo bikes.

This article will examine the turbo bikes you can buy off the showroom floor, and discuss an aftermarket kit which will make your stock street machine a monster of acceleration.

All four Japanese manufacturers announced turbo models in 1982. As usual, Honda was first. Theirs is called the CX500 Turbo, and it's based on the popular water-cooled opposed Vee with shaft-drive. It was designed as a technical showpiece to prove that Honda was leading the way in vehicular sophistication. The bike turned heads at IBM, AiResearch, and General Motors because it uses a brilliant digital computer to control fuel injection, boasts a 240,000-rpm turbo, and produces



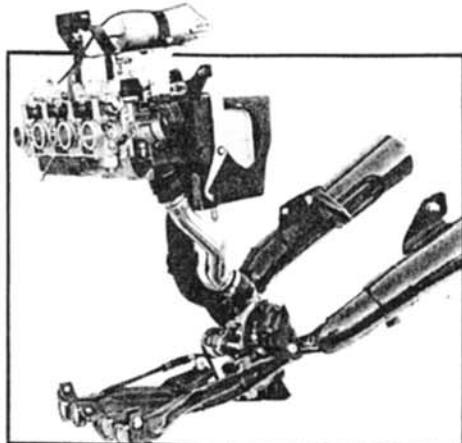
When You Believe There's No Such Thing As Too Much Horsepower

1000cc power from a 500... while simultaneously boosting mileage from 49 to 55 mpg. However, while motorcyclists with a technical point of view were in heaven, those seeking pure performance usually passed for two reasons: the Honda weighs 581 pounds, which is heavy even for a 1000cc superbike, and it costs \$4898, which is hundreds of dollars more than a big-bore superbike with faster performance.

But the Honda still exemplifies the turbo concept beautifully. Take a 14.24/91-mph quarter-mile and let the tiny whirling blades trim the time to 12.27 at

106. Plus, no other Honda offers the turbo's dramatic, swoopy styling that makes you the center of attention at every stoplight. The CX will be bigger for 1983, probably 650cc, so acceleration will rival the quicker superbikes.

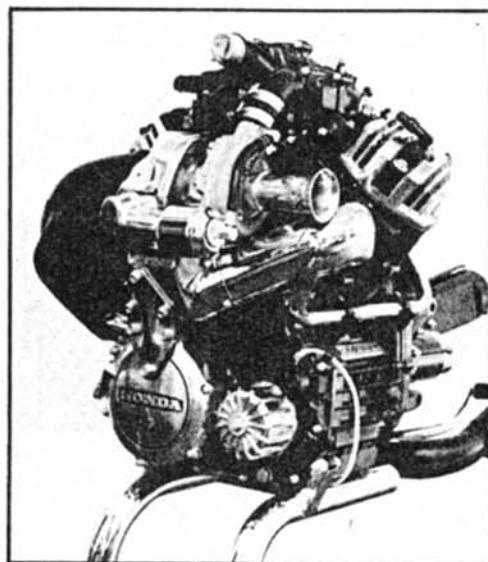
A few weeks after the Honda came Yamaha's turbo entry—a 4-cylinder 650 shaft wrapped in ultra spacey styling. With four cylinders, better breathing, and more displacement, the Seca Turbo had the potential to dust the Honda and frighten the meanest superbikes, regardless of size. Indeed, the prototypes at a press preview in Japan had the feel of gi-



LEFT The Yamaha turbo has the most plumbing, as it routes air from the air filter down to the turbo and back up to the surge tank. Air is stored in the surge tank under pressure, ready to rush inside the engine when the throttle opens. In 1982, horsepower went from 66 on the stock model to 85 on the turbo. Yamaha says the turbo will have much more power in '83.

RIGHT Kawasaki's sinister-looking turbo should be a 10-second quarter-miler when it's released late in '83. But it won't be all horsepower. Check the three-spoke wheels, anti-dive forks, and Uni-Trak rear suspension. It will be the lightest of all the turbos, and that helps handling immensely. The dashboard features a linear LCD tachometer and digital speedometer.

BETWEEN Honda mounts their turbo on the front of the engine and uses two surge tanks to store the pressurized air. The CX500 holds more than 250 patents, several related to the shape and location of the surge tanks. The chassis is equally innovative, with Pro-Link rear suspension and anti-dive forks. Handling is excellent in spite of the Honda's heavy weight.



TURBOS

ant killers, but alas, when the Seca reached production, it had slowed down to a 12.7 quarter-mile at 102 mph. Like the Honda, its significance came mostly from technical innovations and styling rather than performance.

Yamaha located the tiny 39mm Mitsubishi turbo behind the engine, just in front of the rear wheel. This retained the traditional look of four pipes sweeping down from the front of the engine and freed space behind the intake ports for carburetors and a large surge tank. Yamaha chose carbs to save money over fuel injection, and fitted clever reed valves in the surge tank to reduce turbo lag, that irritating delay between twisting the throttle and feeling the acceleration. These breakthroughs produced the best looking, most rideable turbo to date. But you still paid \$4999 for a middleweight with middleweight performance.

Kawasaki and Suzuki both showed turbos to their dealers, but neither has reached the showroom yet. In keeping with Kawasaki's long-time muscle image, the KZ750 turbo has one mission in life:

be the meanest, fastest motorcycle in the world. Kawasaki believes they can reach this goal with a 750 rather than something bigger because of power-to-weight ratios. Their machine is said to weigh under 500 pounds, and with a target horsepower of 110, this will deliver performance better than a heavy 1000 with more power—especially in the handling department.

Kawasaki mounts their turbo in front of the engine as close to exhaust ports as possible. The short distance between the exhaust and turbine blades means less heat loss and less lag. That location greatly disturbs the visual symmetry of the pipes, so the factory concealed the whole arrangement behind a sleek fairing that improves aerodynamics and enhances the menacing look. A digital fuel injection system as advanced as the Honda's meters fuel, but there's no claim for improved mileage. Kawasaki isn't striving for social responsibility. They are interested only in horsepower.

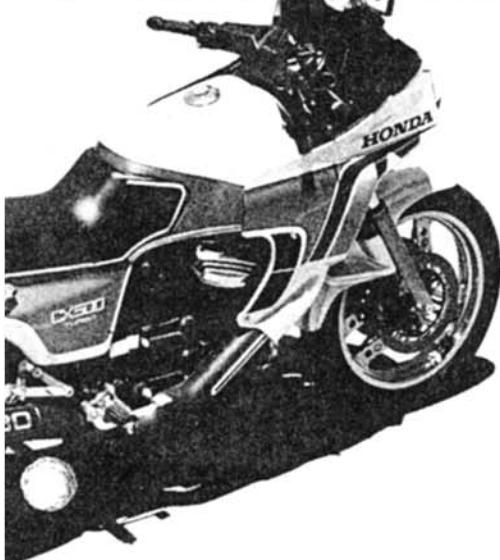
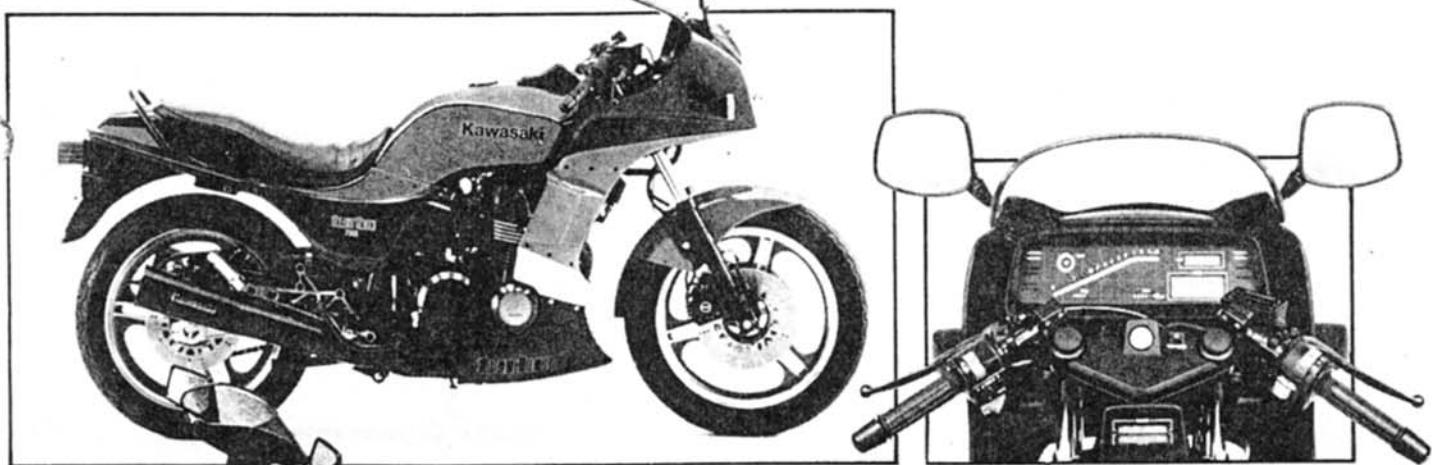
Suzuki's turbo should arrive at dealers shortly. It's a 650 four with less emphasis on turbo-induced horsepower than overall sport-riding prowess. It simply uses turbocharging to give a good-handling middleweight a solid dose of big-bike power. This was also Yamaha's ap-

proach, and it remains to be seen if Suzuki is more successful.

Suzuki calls their turbo the XN85, which refers to 85 horsepower. The IHI turbo nestles on top of the transmission behind the engine block (the location of most kit turbos) and draws exhaust gases through a vertical pipe that hugs the left sidecase. Micro chips control the ignition and Nippon Denso fuel injection, but the system is not as sophisticated as the Honda and Kawasaki computers. A surge tank located extremely close to the inlet ports is said to minimize turbo lag. The XN offers more than turbocharging to lure the sport rider. For instance, there's rear-set pegs, low bars, anti-dive braking, Full-Floater single-shock suspension, and tight styling with a racy fairing. It needs these high-tech extras because 85 horsepower and a dry weight of 506 pounds won't produce irresistible acceleration.

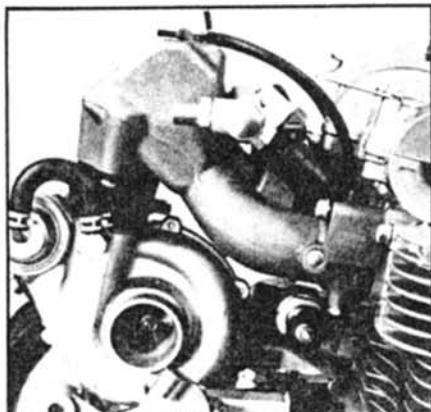
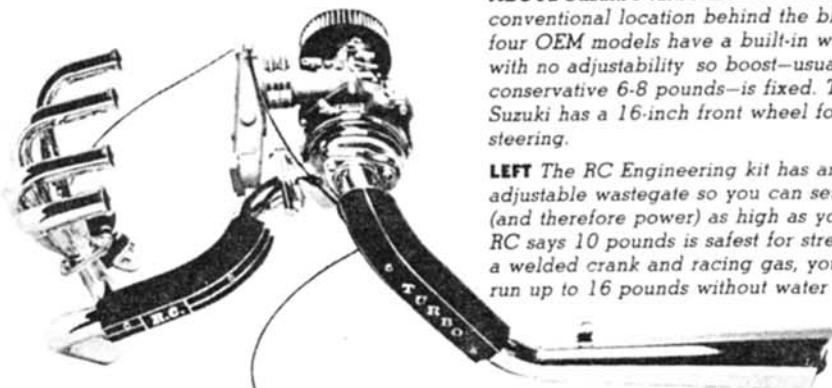
So where's all that neck-snapping glory supposedly inherent with turbocharging? Kawasaki alone promises it, but production is months away. The other factory bikes make heroes of middleweights, but they don't peel the paint off your helmet.

Once again, that type of ultimate performance is left to the hot rodder. He will



ABOVE Suzuki's turbo mounts in the conventional location behind the block. All four OEM models have a built-in wastegate with no adjustability so boost—usually a conservative 6-8 pounds—is fixed. The Suzuki has a 16-inch front wheel for quick steering.

LEFT The RC Engineering kit has an adjustable wastegate so you can set boost (and therefore power) as high as you dare. RC says 10 pounds is safest for street. With a welded crank and racing gas, you can run up to 16 pounds without water injection.



achieve maximum output with a turbo, yes, but he will have to do it himself. Enter the aftermarket turbo kit.

"A 50 percent power gain is child's play," says Russ Collins of RC Engineering, Huntington Beach, California, who markets turbo kits and flirts with 200-mph quarter-miles. "A turbocharger will produce every scrap of power an engine can survive with, and bleed a whole lot more out the wastegate."

RC kits cater to the big bikes: Kawasaki 1000s and 1100s, Suzuki 1100s, Yamaha 1100s, Honda 900s, plus certain 750 models. They're pricey, about \$1650, but include everything—Rajay

turbo, exhaust system, boost gauge, special carburetor, etc. Installation and tuning requires about one day and no special tools. RC recommends welding the crank for extra safety since boost pressure is adjustable through the wastegate and most people will experiment with 15-16 pounds, the practical max. This really produces results. An RC-equipped GS1000 Suzuki ran 9.30 at 155 mph at the dragstrip with no extras but a slick and wheelie bar.

That's more like it. Those are the numbers that give the turbo its reputation... and the rider a religious experience. **HR**

