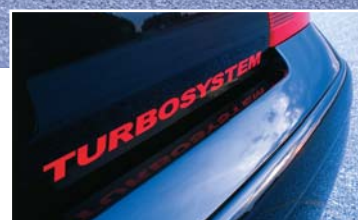


# European car



It's a crisp winter morning on the eastern edge of New Jersey, in countryside that nobody who isn't from there would associate with the state. In the tiny, antique towns we pass through, cuteness and Harleys abound. We've crossed over the river and are now in the woods, driving on winding roads with every sort of turn, camber, surface and visibility. I strap myself into the red, red Sparco driver's seat of Performance Engineered Systems' Passat 1.8T and flip a U-turn. This time, I sort of know where the road goes, so I try a little harder. I lay on the gas exiting a turn taken at seven-tenths, and this front-driver's 19-in. AEZ Bimo wheels (supplied by Edge Racing, 954/217-2980) and Pirelli P-Zero tires spin. I back off until the road straightens, then

## PES Passat

**It's fast. Really fast.**

by **Dan Barnes** Photos by Henry Z. DeKuyper



## PES Passat 1.8T

stand on it. This thing is fast. Really fast. In fact, it has more urge than any other pump-gas 1.8t I've driven. Boost doesn't come on from super-low engine speeds like stock, but it pulls strong to redline the way a sporting engine should. I spend the next 40 minutes confirming this assessment on everything from frost-heaved tracks barely wide enough for yellow paint to multi-lane toll roads.

"We hate the K04," said PES' product development chief, Mike Nuskey. "KKK turbos are nicely made," he went on to explain. "They are just designed for O.E. use." In PES' view, K04s are usually sold as worth a lot more than they

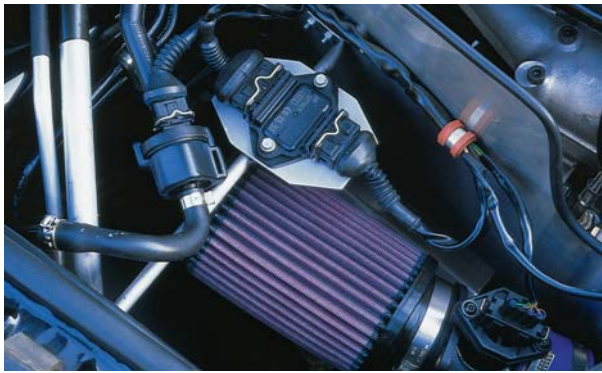
really are. Mike and PES president Tony Ricci met while racing. Tony is a businessman and Mike is a technician who worked for years getting aerospace research projects built. When they came together to start a tuning business, they were committed to doing things the right way, the best way they knew how. In the early stages, PES investigated the K04's upgrade possibilities, talked to KKK's engineers, and found the best it could do while ensuring long-term reliability was 212 crank hp. That wasn't going to be enough. It was possible to get more power, PES reported, but it couldn't guarantee the turbo would live.

PES knew all along that boost was not equal to horsepower, and decided to achieve its power objectives with as low boost as possible. "We want to be very Porsche-like in our dyno figures," Mike reported, "so that customers get as much or more power than we say. There's a huge difference between dyno and road tuning." The dyno is a helpful R&D tool according to PES, but several sensor inputs are very different than on the road, and acceleration is different.

PES set several requirements for its 1.8t turbo upgrade kit, requirements it thinks are correct for any turbo kit on any car that is to be driven on the street. First, it shouldn't be aimed at achieving the fastest quarter-mile ever. Instead, the results should be perfectly acceptable for "your wife's car." It must idle and drive perfectly. That is achieved by keeping the factory engine management happy, not by tricking it. Internal fuel and timing trim corrections must be held to

a few percent. Second, it should be a truly bolt-on installation, with no guesswork and everything in the box. PES has the installation manual on CD. PES has found the Ross-Tech VAG-COM diagnostic software and connector (see *European Car*, "Tool of the Month," Nov. 2001) to be indispensable, allowing PES to diagnose installation mistakes by phone or e-mail from thousands of miles away.

PES' turbo system starts with its own high-nickel-content, CAD-designed cast exhaust manifold, to which is bolted a Garrett T-28 turbocharger. A cast adapter is included to join the turbine outlet to the factory catalytic converter, ensuring compatibility with any down-pipe or cat that fits the factory turbo. The compressor outlet is



## PES Passat 1.8T

likewise positioned in the stock location, so any aftermarket intercooler for the Passat or A4 will hook right up. High-flow fuel injectors and a stainless-steel, shielded cool-air intake with cone filter are included, as is a new mass airflow meter that will accurately measure enough air for over 300 hp. The customer's ECU will be reprogrammed to complete the installation. As well as the above components, every hose, pipe, connector, clamp and gasket required comes in the kit.

The Passat *european car* drove had a custom 2.75-in. exhaust with Supersprint RS4 silencer installed. PES can also provide a high-flow, stainless-steel race cat with 2.75-in.-diameter inlet and outlet, and expects to have its front-mount intercooler available by the time you read this. PES stated the power

developed by a car with its Garrett turbo upgrade kit will range from 270 to 320 hp at the crank, depending on ancillary trim, such as exhaust and intercooler configuration and, of course, fuel octane. The car I drove was estimated to produce 290 hp and 290 lb-ft of torque.

That's a lot of go to be put down through the front wheels. Using it all would be impossible, if not dangerous, in a stock Volkswagen chassis, so PES improved the rest of the vehicle's running gear, too. The gluey Pirelli P-Zeros mentioned earlier make it possible to use the stopping power of a 330mm Brembo brake system. KW's Variant 2 coilover system was installed, consisting of externally rebound-adjustable dampers and springs. They have threaded bodies in front and a threaded sleeve that slips over the damper body in the rear. The ride was good on most roads, with a safe degree of understeer as the cornering limit approached. My only complaint was that the ride height was set to "in the weeds," when a few of the roads I drove on might have been better met with a rally-like stance. But the beauty of adjustable-height coilovers is, ride height can be adjusted.

The Passat's dress-up was done to entertain the car's occupants while keeping outside observers unsuspecting, for the most part. The black exterior was enhanced only with an Oettinger front spoiler and Zender rear wing, while the interior is as red as any Ferrari. The list is small, but the effect is great: The rear seats and door panels were recovered in material matching the Sparco front seats, with Sparco pedals and shift knob providing the

final touch. Put it this way: Weeks later, the car stuck in my memory as red, not black.

PES has done a superb job with this turbocharger conversion kit, but it's not the sort of company to lean back and let the orders roll in. While visiting, I also drove an A4 quattro with an Eaton supercharger on top of its V6 (look for a report soon). PES is also working to expand its lines of tuning parts for the rest of the vehicle on several fronts, in addition to developing a transverse 1.8t turbocharger

upgrade. PES expects to be close to, if not in production with it by the time you read this. *european car* has seen pictures of a TT and tentative numbers starting with three have been talked

about. With a T04-frame Garrett and external wastegate, that is believable. I, for one, can hardly wait to light up all four. ❧

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