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COVER STORY

VITAMIN K Move Over Rover

400+whp Supercharged Honda K24/K20
Pushes This Exige S1 to New Heights
Text by Brian English // Photos by Michael Ferrara

Adhering to the company's mantra of "Performance Through Light Weight,"

Lotus developed its S1-series Exige in 2000. Powered by a 177-horsepower Rover K-series engine, the 1,700-pound mid-engine sports car delivered phenomenal performance.

When Chris Wilson came across the opportunity to pick up this 2000 Exige S1 rolling chassis minus the engine and transmission, he quickly closed the deal. The next step was to source an engine and transmission. Building up a Rover K-series engine was an option, but finding parts in the States is next to impossible. A more plausible solution would be installing a Toyota 2ZZ engine and transmission like the ones fitted in the current-generation Exige and Elise. This 1.8-liter engine would offer 190-horsepower while adding just 70 pounds to the package. However, Chris would find an even more powerful solution in the Honda K-series engine and transmission. This engine and transmission package could be a reality with an off-the-shelf conversion kit. Going this route, the base engine could pack as much as 2.4-liters of displacement.

Good Plan, Wrong Engine Builder

With what seemed like a solid plan, Chris contracted a Honda-performance specialist shop to build him a engine that would excel when teamed with a Rotrex centrifugal supercharger. Unfortunately, he picked the wrong company. The K20A2 "built" engine that was delivered had used bearings, 13:1 pistons that interfered with the head and an engine sensor installed backwards. As a result, the engine ran for a few minutes before failing. Tear down of the engine revealed a number of additional mistakes. Making the best of the situation, Chris found a capable engine builder to assemble an even larger displacement 2.4-liter K24A8 bottom end.

Time to See the MD

After the incident with the first engine builder, Mark Dibella of MD Automotive took the lead in getting the Honda-K-powered Exige back on track. This time, RS Machine of Norwalk, CA would properly prepare the Honda motor for a supercharger. To handle the higher cylinder pressures, forged 10:1 pistons from CP Piston were hung on Carrillo forged connecting rods. The rods connect to the blueprinted K24 crankshaft. ARP head bolts secure the built bottom end to the K20A2 cylinder head from a 2002-04 RSX Type-S. This i-VTEC head provides variable cam timing and airflow capabilities superior to other Honda K-series heads. These aspects are further improved upon by a set of BC Brian Crower Stage-2 camshafts, valve springs and retainers.



Power Under The Belt

After receiving the engine back from the machine shop, Mark designed and installed a kit centered around the Rotrex C30-94 supercharger capable of airflows to just over 400 horsepower. The centrifugal supercharger draws air through a K&N intake filter and pushes it through a PWR air-to-water intercooler to reject air-charge heat. Once the chilled air pressurizes the Honda intake manifold at 14 psi, RC Engineering 750 cc/min injectors spray 91-octane pump gas into the intake ports. After the air/fuel mixture rushes into the cylinder, NGK spark plugs ionize the gap to initiate the combustion process.

Pro Control for the K

A Hondata K-Pro engine management system wires to the vehicle through an Apex Speed Technology custom wiring harness. After tuning by Hondata co-owner Doug MacMillan, the supercharged K24/K20-hybrid engine delivered 412 peak horsepower and 290 lb-ft of torque to the wheels as measured on MD Automotive's Dynojet 248 chassis dyno. At the flywheel, those power figures equate to 485-flywheel horsepower. That's a 174-percent increase in power over the original Rover K motor.

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