



THE HAMMER

HITTING THE STREETS WITH A BLOWN BOW TIE



Some performance poseurs tout the virtues of a velvet glove on an iron fist. But don't most guys just wanna go fast? No velvet — just raw, unrefined Detroit iron. It's a proud tradition that goes back to the days of the '70 Chevelle SS 454 with the "stripe delete" option. The lack of any body markings made this popular musclecar a sleeper, a Q-ship that bared its gun barrels only when challenged at the stoplight.

In building his all-red, supercharged, and intercooled '04 Chevy Silverado, Jim Bell of Kenne Bell reached back to this era of no fluff, all-business performance. It was a time when Chevy produced a whole slew of

big V-8, rear-drivin' road cars such as the Nova, Camaro, and Impala.

Those days are gone now, replaced with geeky front-wheel-drive techno platforms. OK, at least there's the GTO, but it's built in Australia, for crying out loud, and it's a Pontiac to boot. Where's a good rear-drivin', big-block Chevy SS when you need one?

Well, this blown Silverado may not be a sedan on steroids, but it's sure one kick-butt muscle truck. How 'bout 500 hp and 566 lb-ft of torque? And those figures were measured at the wheels on a chassis, so actual engine horsepower is in the neighborhood of 600-plus horses and 700 lb-ft of torque.



These tests were done on the intercooled version with 100-octane fuel, which allows the boost to go as high as 13 psi. (For comparison, the stock 5.3L puts out 244 hp and 289 lb-ft at the wheels, according to Kenne Bell's data.)

All of which means there's enough punch at the wheels from this blown 5.3L to bring back GM's glory days and keep them here for years. And that's in a lightweight shortbed standard cab with no frills or flab to slow you down. Figure on a quarter-mile time in the low 12s at 112 mph once you figured out how to hook up the power.

For all his love of simple, unadulterated performance, Bell isn't reluctant to draw on current technology to turn back the clock. His twin-screw supercharger works smarter, not harder, to produce such a prodigious output.

Unlike a roots-type blower, the twin-screw setup has a number of technical advantages. How does the Kenne Bell's twin-screw supercharger differ from the traditional roots type? Bell cites three basic differences with a twin-screw blower: lower inlet temperatures, less parasitic loss, and internal compression (inside the blower case instead of the intake manifold).

Lower temperatures allow for a denser air charge for more efficient combustion. Also, since a twin-screw requires less power to drive (Bell claims 10 to 16 hp, depending on boost level), the engine has that much more power to transfer to the driveline.

As for internal compression, this results in quicker and smoother boost delivery, but requires a bit more explanation. The twin-screw differs from the roots by compressing the air between two intermeshing rotors, instead of in the manifold. These rotors are usually differentiated as male and female. By adding "twist" to the rotors (hence the twin-screw name), they create internal compression, as well as smoothing the flow, making it more continuous, and efficiency rises.

In contrast, the rotors in a roots supercharger typically push air on their outer surfaces, which flows along the inner sides of the case. One potential drawback of a roots blower is that the fill/discharge cycle can be "lumpy," in that air comes in bursts, rather than smoothly and continuously.

That's because this unit compresses the air merely by shoving it into the intake manifold. So when this mass of unpressurized air tries to enter a manifold full of the already pressurized air, it first rushes from the manifold into the supercharger chamber, before being shoved back out into the



manifold. This means much of the air is pumped twice, and it goes past the edges of the supercharger exit three times. The resulting turbulence heats the air, reducing compressor efficiency.

What else did Bell do to his Silverado to give it an edge? For even more output, he side-mounted an intercooler [this setup allows it to be retrofitted on earlier Kenne Bell superchargers, and also allows for longer intake runners to produce better torque numbers]. The cooler air charge doesn't add power by itself, but allows the boost to be set at higher levels without any damaging detonation.

In addition to installing a supercharger and intercooler, he also modified several other areas of the engine, starting with the fuel system. Some vehicles use a return line, which on a supercharged engine can create problems with octane loss when fuel delivery is increased for the blower [due to increased heat from friction at the orifices]. Fortunately, the Silverado doesn't have one, so all Bell had to do was drop in larger 42-pound injectors and his Boost-a-Pump for upping the fuel flow.



Instead of putting in a larger fuel pump, the Boost-a-Pump increases the fuel delivery by simply bumping up the voltage on the fuel pump from 12.5 to 16 volts when a pressure switch is activated under boost. At cruising speed, however, the pump flow remains stock, so there's no sacrifice of fuel economy — until you stomp your right foot, of course.

A similar approach is used on the Boost-a-Spark, dialing up the juice to the Denso plugs from 13.5 to 21 volts for a better burn of the air/fuel mixture. And to vent those burnt gasses, downstream from there is a 3-inch Gibson exhaust and muffler. Bell's dyno tests indicate that this system alone freed up 9 hp and 10 lb-ft of torque.

In addition, Kenne Bell installed its Optimizer II system that takes out the soft shifts programmed into the factory computer. Remember what we said at the outset about no velvet? This module upgrades the stock calibrations that typically reduce power output at the gear changes. Not only does it add a quick boost of about 18 hp, Bell says, it also reduces trans slippage for crisper gearshifts. To improve the transfer of all these power gains to pavement, the Toy Shop tweaked the tranny for maximum responsiveness.

Bringing all that performance to a clenching halt is a set of Baer brakes. Bell found the stock binders slowed the truck from 90 to 0 mph in 357 feet, but the Baer claws did it only 300 feet, and with minimal fade.

Hotchkis lowered the suspension 3 inches in front and 4 in the rear for that nose-down hot-rod stance and reduced body roll. This truck rolls on some big rims: 23-inch B1 Oasis fitted with Toyo Proxes rubber (305/40R).

A Goodmark cowl-induction hood is the only hint of what lurks in the engine bay, while the Street Scene grille and front fascia add a distinctive treatment as well. A Gaylord's Speedsturr Wing Lid, designed to smooth airflow over the cargo area, also creates some down-force as well. Inside, Katzkin custom upholstery is the only concession to creature comforts. The rest, as the old saying goes, is all about dropping the hammer. ■