

CHEVY How-To

STORY AND PHOTOGRAPHY BY RICHARD HOLDENER

INDIVIDUAL ACHIEVEMENT

An IR Manifold for Your LS1 or LS2

Individuality is one of the cornerstones of a true enthusiast. After all, who wants to drive around in a car that looks like everyone else's? The reason you built a personalized Chevy in the first place was to express your individuality, right? The potential problem with this expression of individuality is that it can often get you into trouble. Case in point: exotic induction systems.

Designed for the late-model Gen-III motors, the individual-runner intake from Pantera not only looks trick, but it is also actually worth a considerable chunk of power over the factory LS1 or LS2 manifold.





1 Each runner was equipped with a 2-1/2-inch butterfly to maximize flow to each runner. **2** To further improve power, the individual-runner intake also featured radiused air entries.

We all know that topping our mild-to-wild small block with a single four-barrel carburetor will likely result in plenty of trouble-free miles. Once properly tuned, a single four-barrel and dual-plane intake will offer an impressive combination of performance, throttle response and fuel mileage. The problem with this impressive combination is that a tried-and-true four-barrel is a tad on the dull side. Popping the hood at the weekend donut shop, local rod run or car show to reveal a simple carbureted intake will not likely take anyone's breath away, no matter how well it's executed. Don't get me wrong; for any type of daily driver, it is hard to beat the simplicity, serviceability and performance offered by an Edelbrock Performer RPM Air-Gap intake and Holley 750 carb, but there's not much of a wow-factor involved.

Plenty of induction systems are available for your ride that will take people's breath away. Systems like a dual-quad, tri-power or mechanical fuel injection are all high on the cool scale, but they have their problems (they're nice to look at but are ultimately high-maintenance, leggy supermodels). Multiple carburetion makes an impressive under-hood statement, but it is

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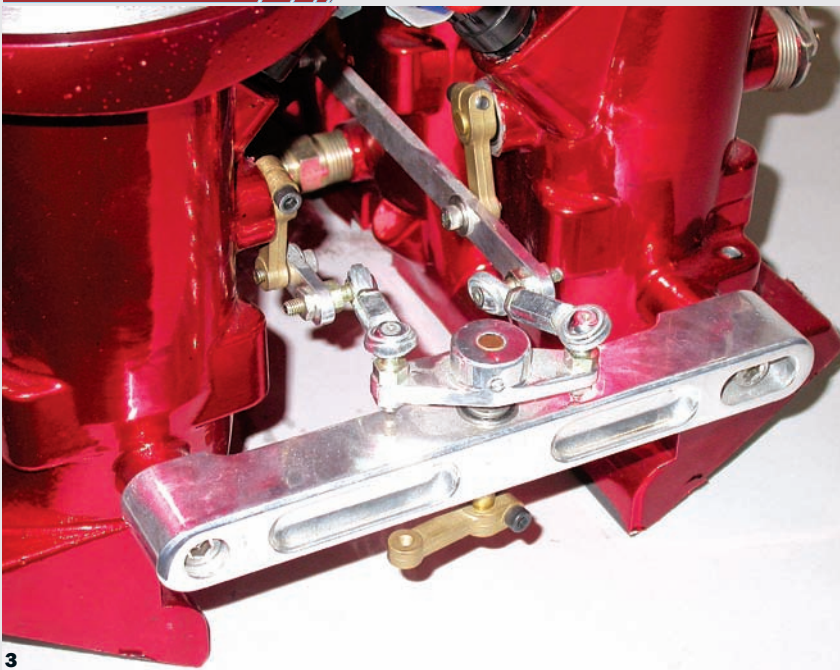
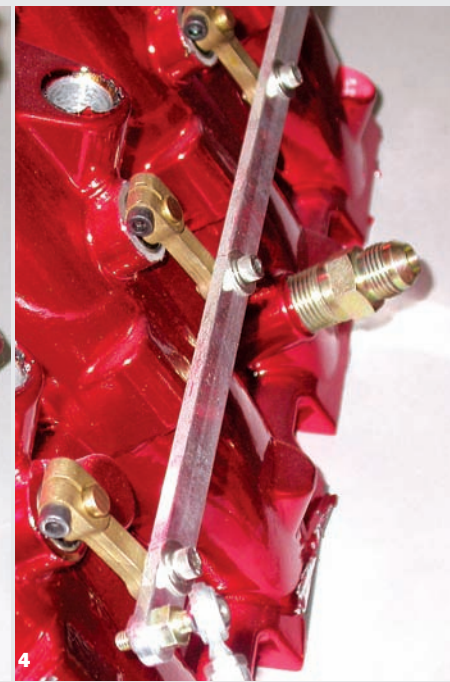
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3 The throttle linkage was run through the center of the manifold. A bell crank and transfer rods were used to activate the eight individual throttle blades. **4** Unlike most EFI systems, the injectors were positioned above the throttle blades. This position provides a pronounced cooling effect on the air stream to further improve power.

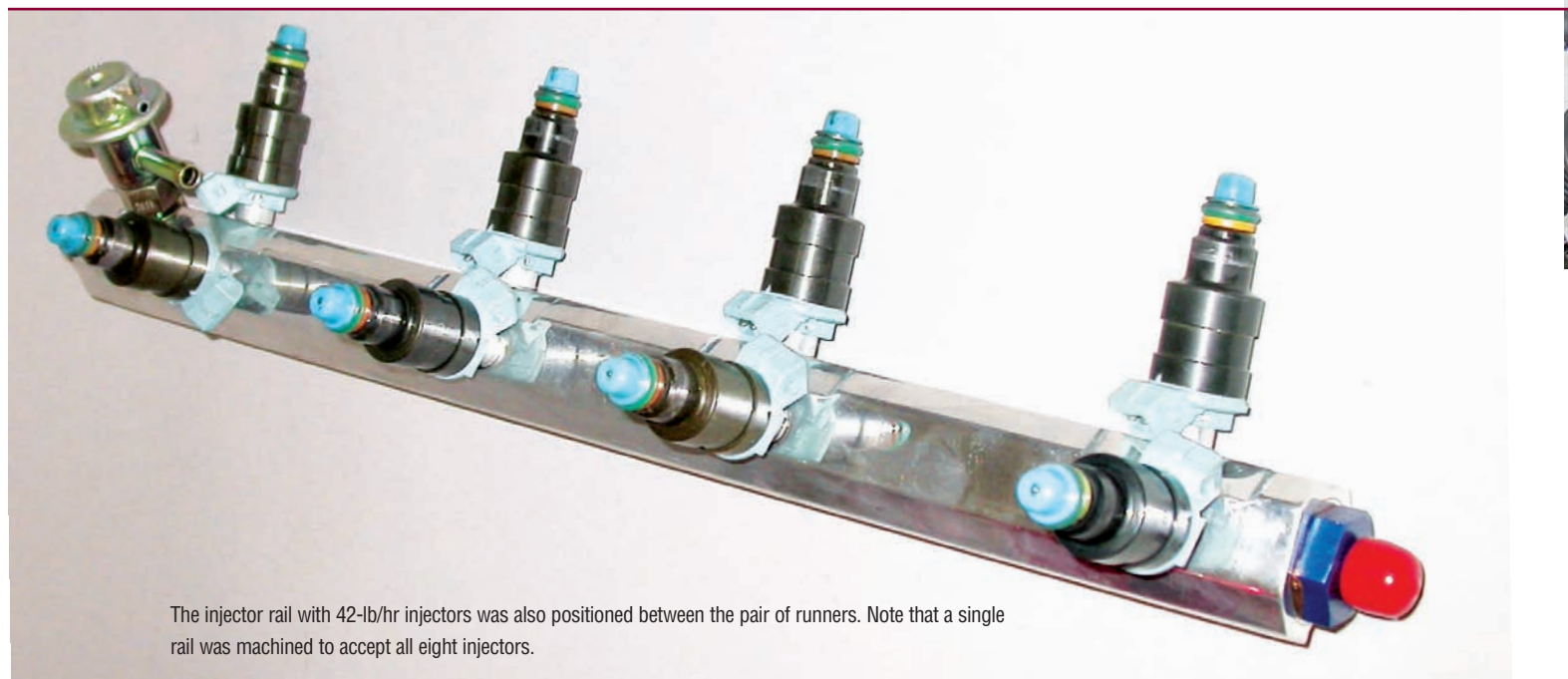
the rare multiple-carb setup that will offer more performance than a single four-barrel. The exception here is a finely tuned racing application in which total cfm becomes most important.

Whether you are running an inline dual-quad or a trick cross-ram, the simple fact that you have twice the number of carburetors may mean that you'll have twice the number of problems but, unfortunately, not twice the performance. This holds true for tri-power systems (although the new Barry Grant systems perform

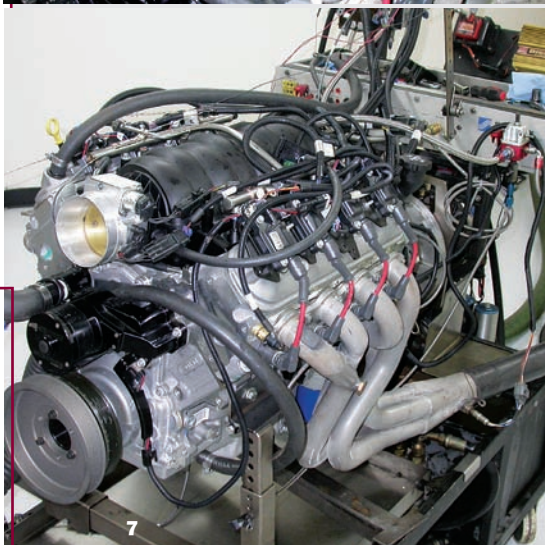
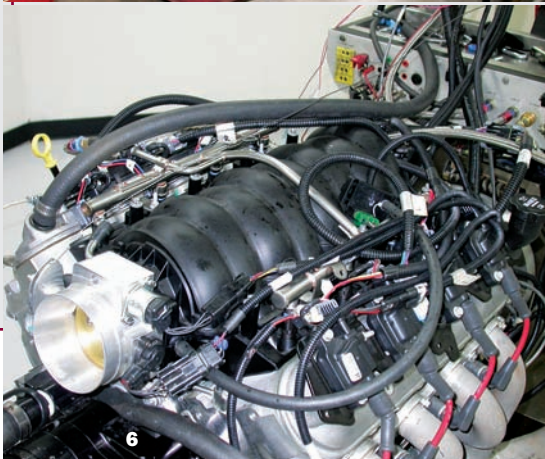
quite well), 6-deuce setups and even manifold setups with a quartet of dual-throat Webbers. If looks are all that matter, any of these systems will certainly be visually impressive, but what about a system that cooks as good as it looks?

Without a doubt, the new Gen-III small blocks currently offered by Chevrolet are impressive performers. Whether you choose the 345hp LS1, 400hp LS2 or almighty 500hp LS7, the Gen-III series has plenty to offer in terms of factory performance. Being true small-

block Chevys, the new LS-series motors also respond very well to performance upgrades, including trick induction systems. From a performance standpoint, there is a lot to like about these new motors, including their lightweight and all-aluminum construction, impressive specific output and responsiveness to a wide variety of performance components. Available in crate-motor form from GM Performance Parts and a wide variety of aftermarket sources, the new LS-series engines are becoming very popular in all



The injector rail with 42-lb/hr injectors was also positioned between the pair of runners. Note that a single rail was machined to accept all eight injectors.



5 Since we would be running timing sweeps (advancing the timing until the motor stopped making power), we decided to add a can of octane boost to our 91-octane pump gas. **6** The LS2 crate motor is a GM Performance Parts item. We installed a Crane Z-series cam that offered 0.551-inch lift, a 216/224-degree duration split and a 115-degree lobe separation angle. The motor was also run with a set of Hooker headers and a 90mm FAST throttle body. **7** Run with the FAST XFI management system, the mildly modified 6.0-liter GMPP crate motor produced 463 hp and 450 lb-ft of torque.

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8 Off came the stock LS2 intake, and on went the Pantera EFI IR manifold. Talk about impressive-looking! **9** Running the same air/fuel ratio and timing, the IR manifold improved the peak power output from 463 hp and 450 lb-ft of torque to 486 hp and 456 lb-ft of torque. **10** We wondered if the air filter assemblies might represent a restriction, so we ran a test with the filters removed. There was no change in power, so make sure to run the filters on your classic Chevy.

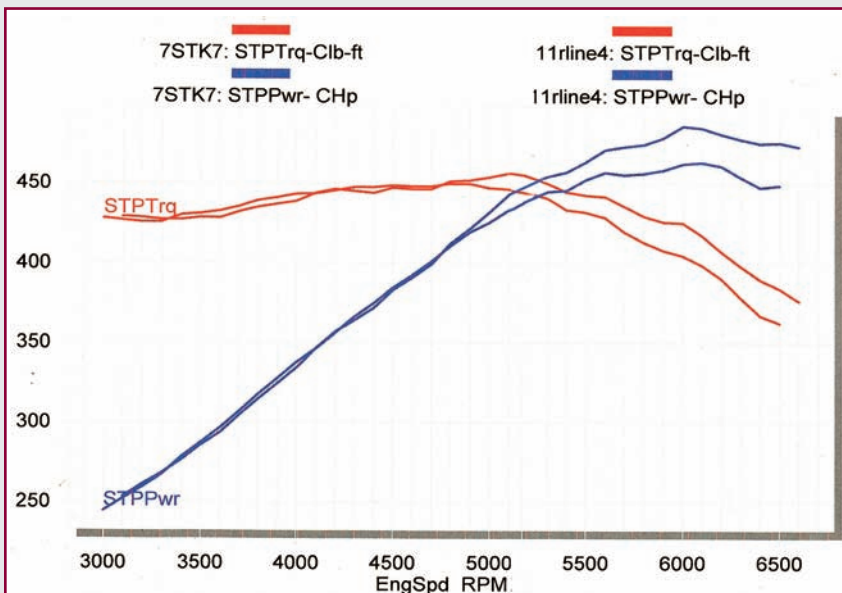
manners of high-performance installations. While the factory LS1 and LS2 feature composite intake manifolds (further reducing curb weight), the black plastic is not really the induction system that dreams are made of. Even when equipped with a polished aluminum throttle body, the stock intake leaves something to be desired in terms of a visual statement though the stock manifold does offer plenty of performance.

While intake manifolds, both carbureted and EFI, exist for LS1 and LS2 motors in the aftermarket, we came across a system that looked like nothing else currently available and promised not only

to be as powerful as the already-impressive factory system, but to actually improve upon the composite intake. Available from Pantera EFI, the individual-runner intake differed substantially from the stock LS2 manifold on our GMPP LS2 test motor. As an individual-runner (IR) intake, the system included no common plenum but had eight individual runners, each fed by its own 2-1/2-inch butterfly. There were shades of the old big-block Can-Am inductions to be sure, but the system proved itself not only plenty powerful, but also impressive at lower engine speeds compared to the long-runner LS2 intake.

As supplied by Pantera, the IR system included a two-piece intake system, throttle linkage, injectors, common fuel rail and billet aluminum bracing to maintain proper port alignment. The system also included a pair of aluminum filter assemblies that, according to our testing, represented absolutely no restriction, even approaching the 500hp mark. We always like when a design incorporates proper filtration and efficiency as an air filter should be considered mandatory on any street motor.

Impressed as we were by the looks of the system, we couldn't wait to run it on our test motor. We used a GMPP 400hp



GRAPH: GMPP LS2: STOCK VERSUS PANTERA EFI IR MANIFOLD

This individual-runner intake from Pantera EFI was worth the installation by looks alone, but what can we say about a manifold that not only looks sweet but also adds a bunch of power? Run on a mild LS2 (cam and headers), the Pantera EFI IR intake improved the power output of the LS2 crate motor from 463 hp and 450 lb-ft of torque to 486 hp and 456 lb-ft of torque. Given the length and diameter of each runner, we fully expected power gains at the top of the rev range. What was pleasantly surprising was that the IR manifold did not give up any power down low compared to the stock intake. From both visual and performance standpoints, the Pantera EFI IR intake was the clear winner over the factory LS2 intake.



LS2 Corvette crate motor and added a mild Crane Z-series cam (216/224 degrees at 0.050-inch), a set of Hooker headers and a FAST XFI engine management system. Equipped with the factory LS2 composite intake and a 90mm throttle body, the mildly modified LS2 crate motor produced 463 hp at 6,100 rpm and 450 lb-ft of torque at 4,800 rpm. The XFI management system allowed us to dial-in the air/fuel and timing curves.

After establishing a baseline, we removed the stock LS2 intake and replaced it with the individual-runner system from Pantera EFI. Running the same air/fuel and timing, the new IR intake increased the peak power numbers from 463 hp and 450 lb-ft of torque to 486 hp and 456 lb-ft of torque. While we expected to see power gains at the top of the rev range, we were pleasantly surprised by the fact that the IR intake did not trade low-speed torque for the impressive gains at the top of the rev range. With good looks and impressive power, individuality doesn't get much better than that! **CR**

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