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Are Two 4-Barrel Carbs Better Than One? We Dyno Test Them To Find Out

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Super Chevy, August, 2007

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Although I remember my dad telling me that sometimes it's better to be lucky than good, I've come to rely more on luck, since good continues to elude me. On the other hand, luck continues to fall right into my lap. Case in point: my recent trip to Westech for some dyno testing. Actually, the trip was more in preparation for an upcoming dyno day. You didn't really think these test engines built themselves did you?



As I muddled over which heads to install on the awaiting 383 Chevy, luck walked right up and introduced itself. In most cases, direct back-to-back dyno testing requires a great deal of preparation, even before you get to the actual day or days of dyno testing. Believe me, even with all the preparation in the world, dyno days often go astray. Things don't fit, bolts get stripped, and parts don't show up on time, but none of that matters because today (as luck would have it), the gang from Westech was already performing a direct back-to-back test, just the way I like it. To make things even better, the comparison went beyond the usual part A vs. part B; it pit brother against brother, in a high-performance civil war of sorts.

In addition to the cool comparison, the testing was also proof positive that high-performance from the past has found a way into the youth of tomorrow (despite MTV's best effort to the contrary). Without fresh blood in the system, the original small-block Chevy is doomed to follow the missing motors of yesteryear. Sure, we have the modern LS family to carry us over-and an impressive powerplant it is-but there is something about the assembly of an original 23-degree small-block that just feels like home.



Both 400-inch small-blocks were equipped with Edelbrock carbs and Air Gap manifolds, but e

Now that I've waxed nostalgic about an era I was far too young to appreciate from the driver seat (I was a mere 7 years of age when the LS6 Chevelle ruled the streets), it's time to get to the comparison. This particular motor was a small-block Chevy, a stroker version no less. Truth be told, the stroker was actually a factory 400 block and matching crank, making it not so much an aftermarket stroker as a large-displacement factory small-block. While 350 small-blocks are a dime a dozen, you don't often see 400 small-blocks being rung out on the dyno for all they're worth.



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Upon inspection of the small-block, I noticed that it resembled a similar version currently residing out on an engine stand. Naturally, my first inclination was to review the power, as the motor in question had already been properly tuned and jetted. After expressing the observation that the two motors looked very similar (with the exception of the induction system), I was informed that the two motors were, in fact, identical. Each of the brotherly combinations were 400-inch small-blocks equipped with the same Eagle cast crank, Eagle rods, and Sealed Power hypereutectic (flat-top) pistons. In the interest of full disclosure, one combination required a .040 bore for proper clean up while the other made due with just .030 over.

Each combination was fitted with the same hydraulic roller cam profile. The custom Comp grind offered a .520/.540 lift split, a 236/242 duration split and a 110-degree lobe separation angle. Naturally, installation of the hydraulic roller cam profile in these early 400 blocks required the appropriate hydraulic roller retrofit kit. Since these two motors were destined for rat rods (stepping them up a few more notches on the cool scale), both were equipped with old-school Pete Jackson gear drives.

Since the buildups were definitely budget oriented, the 400s were topped with a set of Pro Comp aluminum cylinder heads. The aluminum heads naturally dropped precious pounds off the buildup (thereby improving the all-important power-to-weight ratio) and helped suppress detonation as well, thanks to the superior heat dissipation of aluminum. The Pro Comp heads featured 2.02-inch intake valves and 1.60 exhaust valves to maximize the flow of gases through each motor. Though not provided in the spec sheet, the chambers must be near 76cc to achieve the sub 10.0:1 compression ratio with the 3.75-inch stroke offered by the 400.

Additional performance touches included Mellings HV oil pumps and Edelbrock timing cover sets. Initially, the Pete Jackson gear drive and Edelbrock timing cover would not cooperate, as the cover was designed for a conventional double-roller timing chain. A little machining here and there and the two were finally able to coexist. Both motors were even equipped with identical Mallory ignition systems, right down to the 8mm plug wires.

While the brothers agreed on running identical 400-inch small-blocks, the civil war started with the induction system. While Joe Tally went with the tried-and-true single four-barrel carb setup, his brother Jesse stepped up to the impressive dual-quad system. With otherwise identical small-block Chevy motors, here's where the comparison test came in.

Truth be told, any intake manifold that goes up against the Edelbrock Performer RPM Air Gap is likely to have quite the uphill battle. Tested time and time again, the impressive dual-plane intake has proven itself a powerful performer, offering not just impressive peak power but a veritable avalanche of mid-range torque. Things get even more difficult for a dual-quad manifold, as we've never been able to match the power output of a single four-barrel with a dual-quad system in a modern street application. That said, the dual-quad has a lot more to offer than just horsepower. You're not likely to wow anyone at the local hot-rod morning meet by lifting the hood to reveal a single four-barrel, but dual quads are a whole different story. They may not match the power of a single-quad, but they more than make up for it in presence.

Thus our dyno comparison had predictable results, this despite the fact that the dual-quad intake in question was the new Edelbrock Dual-Quad RPM Air Gap. A huge step up the performance ladder compared to the original C-26 dual-quad intake, the RPM Air Gap offers larger runners, a taller mounting pad, and the legendary Air-Gap design to cool the intake charge. Equipped with the Performer RPM Air Gap dual-quad intake and matching 500-cfm Edelbrock carbs, Jesse's 406-inch street small-block produced 406 hp at 5300 rpm and 470 lb-ft of torque at 3900 rpm. As expected of the long stroke 400, torque production was impressive from 2500 rpm all the way to 5000 rpm, never



Wanting impressive street performance, both 400s were equipped with hydraulic roller cams.



Each combination received a set of aluminum Pro Comp cylinder heads. Each head features a



Both motors were run on the engine dyno with the same set of 1 3/4-inch Hooker headers.

Latest A



dropping below 400 lb-ft of torque. Torque production from the 406 exceeded 450 lb-ft from 2900 rpm to 4600 rpm, making for a sweet (and useable) power curve.

By comparison, Joey's RPM Air Gap and single 750-cfm Edelbrock carb showed why so many small-blocks are currently running around with dual-plane intakes and single four-barrel carbs. His 406 Mouse thumped out over 500 lb-ft of torque, with a peak reading of 505 at 3900 rpm on its way to a peak power number of 444 hp. Torque production from the single-quad motor exceeded 450 lb-ft from 2500 rpm all the way to 5200 rpm. While the single four-barrel intake may not have the look, it sure enough knows how to cook.

Is this the definitive answer to the single- vs. dual-quad dilemma? Not hardly, since a small-block reflects an owner's personality. If maximum power were the only criteria, the world would be filled with race motors. This is especially true of induction systems, as even the most mundane small-block pulled from a long-forgotten donor in the wrecking yard will garner its fair share of oohs and aahs once topped with a 6-71 blower, a stack of Weber carbs, or even a dual-quad intake system. Will the wild induction system take over the street and show scene? Not likely, since the single four-barrel offers drivability and (as demonstrated by this comparison) power production that is difficult to match with a multi-carb system.



The motors were run on the engine dyno with a Meziere electric water pump and a Pro Street



Ignition chores were handled by Mallory HEI distributors feeding juice through a set of 8m

When it comes to recommendations, the induction choice comes down to the intended application. If your car is destined to live its life a quarter-mile at a time (excuse the "Fast & Furious" quote), then a racy single-plane intake and large double-pumper might be the best choice. If all-out performance isn't a primary concern and you're interested in maximizing fuel mileage, maybe a Q-Jet or even a two-barrel might be the way to go. If street performance is the key, it's hard to beat a single four-barrel on a dual-plane intake like the Performer RPM Air Gap. If the wow factor is a key ingredient, who can argue with a trick dual-quad system?

The single-quad combo was equipped with a 750-cfm Edelbrock carb. The RPM Air Gap also received the benefit of a 1-inch open carb spacer.



Run on the Super Flow engine dyno, the single four barrel 406 produced 444 hp and 505 lb-ft of torque.



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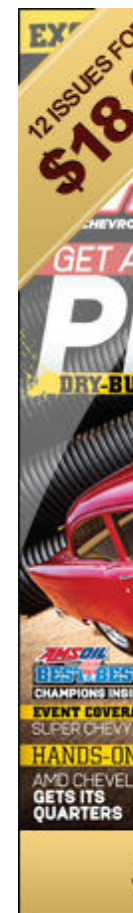
Like the single-quad combination, the dual-quad small-block received identical Pro Comp aluminum cylinder heads.



Rather than the go the single-carb route, Jesse topped off his 400-inch small-block with a trick dual-quad setup. Compared to the original Edelbrock C-26 dual-quad intake, the RPM Air Gap induction system was 1 5/8-inch taller. Hood clearance was not a problem since both motors were destined for home-built rat rods.

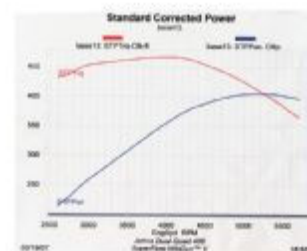


The new RPM Air Gap dual-quad intake offered a significant improvement over the original C-26 intake. Few things look as good as a pair of dual quads, and now Edelbrock has added bite to go with the bark.



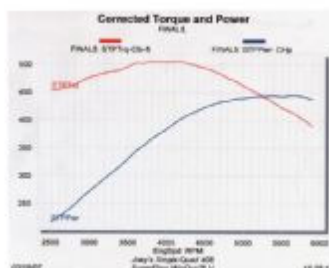
406 Small-Block Edelbrock Performer RPM Air Gap Dual Quad

Who wouldn't be happy with a street engine that pumps out an honest 1 hp per cubic inch, especially when the motor displaces 406ci? Equipped with a set of Pro Comp aluminum heads, a healthy hydraulic roller cam, and the new Edelbrock Performer RPM Air Gap Dual-Quad intake (with 500-cfm carbs), the 406 produced 406 hp and 470 lb-ft of torque. Torque production from the big-inch small-block exceeded 450 lb-ft from 2900 rpm to 4600 rpm. Add to this power production the cool factor that comes only with multiple carburetion and you have an impressive rat rod powerplant.



406 Small-Block Edelbrock Performer RPM Air Gap Single Quad

This combination clearly demonstrates why dual-plane intakes combined with a single four-barrel carb rule the streets. Equipped with the Edelbrock Performer RPM Air Gap and 750-cfm carb, this 406 produced 444 hp and 505 lb-ft of torque. In all honesty, it is tough to beat the Air Gap for average power production. This combo netted torque reading that exceeded 450 lb-ft from 2500 rpm to 5300 rpm.



And A One, And A Two...

The results of our comparison show the single four-barrel to be the hot setup, however, as the old advertising escape clause goes, "individual results may vary." An Edelbrock spokesman says its testing has shown the two systems used

here to be very similar in power output, and that he was surprised by the 39hp deficit we witnessed for the dual quad. In hindsight, maybe we should have swapped induction systems to see if there were any variances in the two 406s. Still, given our compression ratio, cam, and redline, our trusty old carb-picking formula says 750-cfm should be just about ideal for this engine.

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