

TECH TIPS

Supercharging vs. Conventional Bolt Ons

Real vs. Advertised HP Comparisons

Reading this is guaranteed to change your outlook on bolt on products

Before commencing with this discussion, we would first like to make it perfectly clear that Kenne Bell is quite capable of engineering and producing any and all bolt on products. We've been doing it for 38 years. And after 25 years experience in street legal supercharger and turbocharger systems and calibration (chips, computers etc.), developing any other product is child's play.

The most common mistake made by performance enthusiasts is believing exaggerated advertised HP claims. It's time to set the record straight. We've fielded far too many calls from owners complaining about bolt on products not producing the advertised power increases for their truck or SUV. In some cases, these "advertised claims" cumulatively can supposedly equal or even exceed the advertised HP of a supercharger kit. We're subsequently asked "should I buy a supercharger or conventional bolt ons?" Believe this: Anyone who claims aftermarket bolt ons can ever equal the huge low end, mid range and top end power, torque, performance - and fuel economy of a supercharger needs an education or a blood and urine test. Power gains from supercharging is a given because unlike other bolt ons, boost equals power - guaranteed! It's why the OEM's, after exhausting all HP gains from conventional bolt ons, are turning more and more to supercharging.

At Kenne Bell, we believe the overwhelming majority of car and truck bolt ons are a waste of money. One can easily squander anywhere from \$250-\$4,000 and get virtually "0" HP on the "up to's." We are in possession of countless dyno tests on Ford, GM, Chrysler, Mazda, etc. bolt on products verifying these claims. Like it or not, believe it or not, there is little if any HP gain whatsoever in the majority of these "good old bolt on products" (replacement filters, "cool air" kits, "hot air" kits, larger mass air meters, throttle body and spacers, inlet fans or turbulators, cat backs and tailpipe extensions).

Even if a batch of products would combine to make 10HP, it's very difficult to even feel 10HP, which equates to a mere car length in a 1/4 mile acceleration run. And believe us, these products will not magically make the power because of tuning, the driver, the combination, the internet, a friend's recommendation, your vehicle is special, the computer has to "adapt" (that's a joke) or "it worked 10-20 years ago on Dad's truck."

Then there's the "camouflage ads," like the cam ad that reads "93HP!" Impressive? But below the "93HP" it says the engine has . . . "only moderate enhancements." ①GT40 manifold ②World Windsor heads ③ Pro Flo mass air meter ④24lb injectors ⑤Headers. "Only moderate enhancements?" We thought manifolds, heads, mass air meter, fuel and headers were "serious" enhancements and might contribute significantly to the 93HP. So how much does the cam really make by itself?

The reality is that supercharging has clearly become the best - and more often the only sensible approach to increasing the performance of late model vehicles. There's always the combined internal engine mods (heads, cams, manifolds, stroker kits, pistons etc.), but the bill exceeds the cost of supercharging while adversely affecting fuel economy, driveability and low end performance, to say nothing of potential ECM (engine computer) and emissions problems that may not be solvable. Finally, disassembling and replacing these parts can be a monumental and expensive task as compared to a bolt on supercharger kit.

"Superchargers produce "boost" which is guaranteed to make more power in any engine. Other bolts ons can only hope the OEM engineers left a little HP on the table for them." Jim Bell President, Kenne Bell

And it's not just Kenne Bell who has seen the light.

"It Seems everyone today wants just 10 more horsepower that's quick, easy and inexpensive. Well, if there were 10 more horsepower just waiting to be tapped, the factory would have grabbed it already. Cheap and easy power builders are extremely few and far between." Road and Track Magazine

"Today, it's hard to improve the performance of late-model vehicles. Auto manufacturers with decades of racing, R&D, and engine-building experience behind them have become adept at building stronger, more efficient engines. And to top it off, they are now equipping their newest engines with onboard computers. These powerplants tend to run in virtually optimum mode all the time. Consequently, the performance hop-ups of the good old days don't have the same impact they used to. To make matters worse, if the computer doesn't like what's been bolted to the engine, it wastes no time letting you know." With the California Air Resource Board (C.A.R.B) further tightening pollution control, superchargers have become a more viable option than ever. Most supercharger manufacturers closely follow C.A.R.B. guidelines to obtain certification for highway use. Popular Hot Rodding Magazine

The exception is possible 10HP for headers on the '99 up GM 4.8, 5.3, 6.0 Vortec engines without pre-cats. Pre-cats negate the use of long tube headers leaving only the far less efficient "shortie header." Look for 5HP, at best, from this compromised header. Not worth the effort or money. Clearly, the future looks dim for the old bolt ons.

THE COMPARISON

One day we get a call from a magazine who had installed our supercharger on their project truck. Kenne Bell had baseline dyno tested the stock truck at 200HP - but we did not dyno it after the kit was installed. It's typically 280HP (+40%) supercharged. The story begins when the magazine calls complaining that the Kenne Bell supercharged truck "was only making 289HP." We explained that 40% of 200HP stock is 80HP - a lot of HP - and 80+200=280HP just as we advertised so the additional 9HP (289-280) must be due to some other product(s) they might have installed. "What is the problem?" we asked. "Oh no," they said. "You don't understand. We installed 111HP worth of bolt ons, not just 9HP. Should have made 408HP." Here is their first mistake. They didn't dyno it after installing the supercharger but "just knew" the supercharger was "reducing the power." This is what happened. The magazine solicited their advertisers and installed these products on the truck assuming the advertised claims totaling 128HP increase was fact. After all, these products had been around for years. So the magazine mistakenly believed these claims of 128HP and that 200HP stock+128HP advertised=328HP WITHOUT the supercharger. With the supercharger, they concluded, should be 408HP (328+80=408), not the 289 it was dynoed at. "How could all their magazine advertisers be wrong?" Read on.

Our position was that Kenne Bell enjoys a hard earned reputation for testing accuracy and credibility and we're standing by our dyno tests. The discussion became somewhat heated. There were many opinions, theories, quotes and even testimonials. Enough. This was hardly the first time we had fielded customer complaints about bolt on products not performing as advertised, particularly on the '97 up trucks and SUV's. There was - and always is - only one way to settle these disputes - the dyno! We removed the supercharger and then the bolt on parts one by one testing each one with 3 pulls each. All the bolt on products produced a grand total of 9HP, 119HP less than advertised! Blood and urine tests were in order.

ADVERTISED vs. AS TESTED

Bolt On Product	Horsepower Gains		Actual Dyno HP Test
	Advertised	As Tested	
Mass Air Meter	+17	0	200
Cool Air Kit	+16	0	200
Ignition	+15	0	200
Throttle Body	+15	0	200
Throttle Body Spacer	+20	0	200
Cat Back	+20	+1	201
Headers	+25	+8	209
TOTALS	+128	+9	209*
		Kenne Bell Supercharger	+80
		Total with Supercharger & bolt ons	289

9HP is about a truck length in an all out 1/4 mile acceleration run. Does anyone feel 9HP was worth \$2,000? Note that all the stock inlet components were obviously adequate in size (flow) for 200HP and therefore did not and could not possibly increase power. There was no restriction in air flow. Think about all the money you could spend and not improve performance. The boost (guaranteed performance) of a supercharger starts to look better, doesn't it?

We would all like to believe advertised HP claims, particularly lower cost snake oils, fuel ionizers, inlet fans and throttle body spacers with grooves that make "up to" 20HP while improving gas mileage "up to" 6 mpg. And now tailpipe extensions that also reduce emissions 50% and mileage 8.3%? We invite any of these products to be tested on our dyno in the presence of a magazine writer. No charge. Any time. All we ask is that the magazine prints the results for all to see. We may even somehow convince ourselves that these performance claims are true. Unfortunately, that doesn't change the real dyno numbers. There's a quote by a Ford engineer printed on our dyno. It reads "One of the real dangers in running a test is that you're bound to get data."

We are in no way implying that some bolt on products can not make HP on certain vehicles. Many do, but it's becoming increasingly difficult on the new vehicles - and the gains are "0" to not much, if any at all. Making meaningful power increases you can feel is becoming a thing of the past because the factory engineers also know how to make HP. And they're leaving little, if any, for the aftermarket. That is precisely why supercharging has become so popular with OEM's and the aftermarket. The power gains from boost are GUARANTEED. Any increase in "boost" produces incrementally more power in any engine. But how does one determine which other products work or don't - on what vehicles. You can believe our tests or check with someone who has tested the product back to back on a Dynojet dyno with OEM scanners and a data acquisition system. Monitor magazine tests - the good ones by the qualified, unbiased and unafraid.

Question: Why do we never see this information published in a magazine?

Answer: Chances are, you never will because their advertisers wouldn't like it - and possibly stop advertising in the magazine(s).

Question: Isn't that unethical?

Answer: Yes, but it's been standard practice for years.

Question: What about magazine dyno tests?

Answer: If a magazine tests a product from one of its advertisers and it doesn't make more HP or match their claims, do you really believe they would publish the results? Or in some cases, they keep running and juggling the tests until the comparison is favorable - or just use the "company's dyno tests."

Question: Is this true for all magazines.

Answer: No. Muscle Mustangs and Fast Fords, for one, does a great job - and they retain the advertisers and the readers. What does that tell you?

Question: What about supercharger tests?

Answer: Supercharger testing is easy. Everyone knows and agrees that superchargers DO make HP. It's only a matter of how much HP/boost and at what rpm.

"Jim, you were right! We spent over \$1,100 on a cool air kit, mass air meter, throttle body, throttle body spacer and exhaust system and the 0-60 and 1/4 mile times for our new Ford project vehicle didn't change. What a waste. The exhaust and inlet sound good, but we shelled out a lot of money for "tunes." We should have stepped up and bought the supercharger instead." Automotive Magazine

As mentioned earlier, the exaggerated, misleading or untruthful advertised power gains for many bolt on products creates problems for all of us - particularly when one is led to believe the accumulative gains approach or even exceed supercharging.

"It's not what you know, but what you think you know that is not true that creates problems."