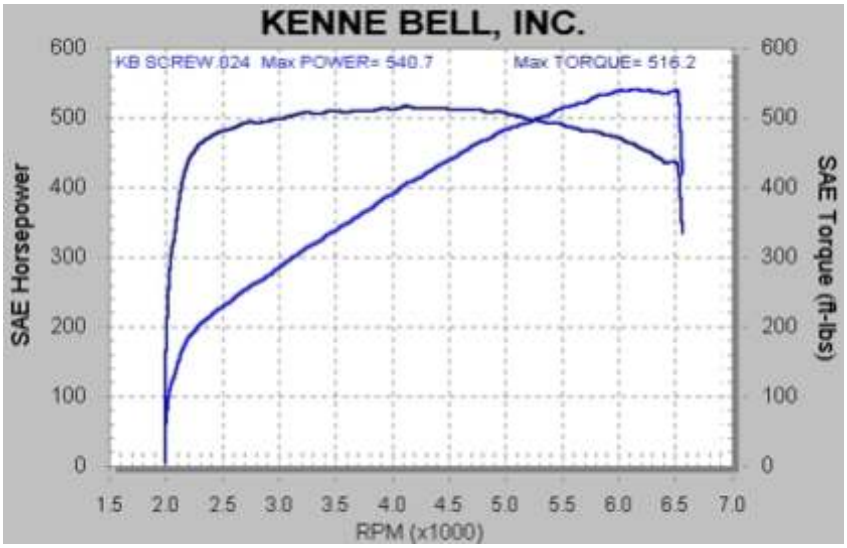
KENNE BELL vs EATON TESTS

(as reprinted from the ModularFords.com website in the Kenne Bell Tech Section)

At Kenne Bell, we dedicate a great deal of time and resources in order to supply our customers with accurate, repeatable results backed up by data acquisition for all our tests. Some of the more important information is then posted on our website at http://www.kennebell.net. Whenever our tests or numbers are challenged or distorted, we have no choice but to respond.

I couldn't help but notice a recent dyno test comparing an Eaton rwhp and rwtq curve to a Kenne Bell. There wasn''t any pertinent information to the test, other than just the rwhp and rwtq comparisons, which falsely portrayed the Kenne Bell as inferior to the Eaton. You would never want to bet your house on any '03 up Cobra with an Eaton, stock or ported, making more hp or tq at any rpm given the same boost as the Kenne Bell.

Clearly, the Kenne Bell curve was not typical, indicating some sort of bad tune or engine problem. Allow us to set the record straight in this post. In looking back through our tests, one of our typical curves at the same peak hp shows much more low end hp and tq, again pointing to a bad chip tune on the comparison made in the post at http://www.modularfords.com/forums/showpost.php?p=71612&postcount=1. We took the liberty of posting our results here (as witnessed by Tom Wilson of 5.0 Mustangs and Superfords) so you could see the difference between a Kenne Bell tune at the same peak hp.



Take note just for example, in our dyno test, at 3000 rpm the rwhp was 287 and the rwtq was 500, no where near their run at 3000, which showed about 250 hp and about 440 tq. Our dyno run, along with the others posted herein, casts serious doubt on the credibility of their posted "red curve". Why does a Kenne Bell tuned dyno curve for the same peak 540-545 rwhp indicate a whopping 516 rwtq and 500+ from 3100 - 5100 rpm, whereas their "red curve" is a mere 474 rwtq peak? And at 2500 rpm, our test shows 490 rwtq where theirs indicates a mere 410 rwtq - a difference of 80 ft. lbs. lower? Nope! We're not buying theirs as a valid comparison.

There exists elsewhere, additional highly accurate, credible comparisons that many of you are not aware of, and might find very interesting and informative. A case in point is "Snake Bite Hit", a huge magazine article from the March 2003 issue of 5.0 Mustangs and Superfords authored by Tom Wilson. A reprint of this article can be found on our website at http://www.kennebell.net/superchargers/ford/cobra03/cobra03-tech.htm "Snake Bite Hit".

Tom Wilson has been around forever and is well respected by everyone in the aftermarket. He was present at all times during the test comparisons of the Eaton vs the Twin Screw to insure fair and accurate comparisons were taking place. He is currently the Tech Writer for 5.0 Mustangs and Superfords magazine. In October of 2002, Tom spent 4 long days at our dyno facility comparing the Eaton to the

Kenne Bell Twin Screw on a virgin Cobra test car. Every attempt was made to conduct dead accurate, repeatable data. All the sensors were recalibrated (as before every new test) and in the end, over 250 compiled and printed pages of data were generated for comparisons.

Tom's goal was to supply useful, meaningful and undisputable data to his readers so they might make more intelligent decisions on supercharging - and make them aware of the tremendous horsepower potential of the Cobra. Remember, this was back in October of 2002. Timing and air/fuel ratios (the two main horsepower variables) were "locked in" by the Kenne Bell chip to eliminate erroneous power data. All water and air temperatures and pressures in and out of the supercharger and intercooler were carefully documented for each run. SAE numbers were used throughout. The inlets to each supercharger were set up the same with our "Bazooka" inlet pipe that offered the same 0" inches restriction and 0 hp loss as our Cool Air Kit (tested all the way to 700 rwhp on Earl's Cobra). This allowed both superchargers to ingest unrestricted airflow, so they could both perform to optimum capacity.

This feature is recommended reading for anyone interested in supercharging. With the change-out from the Eaton to the Kenne Bell Twin Screw, this car made an incredible 617 rwhp and over 604 rwtq through the stock throttle body, cats, exhaust manifolds, fuel pumps and injectors aided by the Kenne Bell Boost-A-Pump and Kenne Bell Switch Chip (included in kit) and only the Kenne Bell Boost-A-Spark (optional) for the ignition system. Tom didn't use any dyno graphs in the article, just the numbers, but here's one of the tests he requested in graph form that everyone should find more accurate and representative than the skewed posted comparison of the Kenne Bell at http://www.modularfords.com/forums/showpost.php?p=71612&postcount=1. This looks like no test we've ever seen or ran on our superchargers - the Kenne Bell does not "take a dive" at 5000 rpm as depicted in that post.

Let's look at some real back-to-back credible data on the Kenne Bell vs. the Eaton with only the supercharger change - same car, tune, dyno, etc....both had the identical 0" inlet restriction ("Bazooka"), and ran approximately 13.5 psi at 3500 rpm. There is a slight variance due to pulley ratios, because the Kenne Bell Twin Screw had to be "slowed down" considerably to closely match the same boost of the Eaton. The s/c drive pulley on the KB was 3.25", the Eaton was 3.00". The crank pulley remained the same. In the dyno test below Tom Wilson requested, the Kenne Bell produced 554 peak rwhp vs 443 for the Eaton. That's 111 rwhp with the same tune (timing and air/fuel ratio) and equalized boost at 3500 rpm. For those interested, we have another test at 13 psi, where both superchargers utilized the stock inlet system You should also find that test informative.

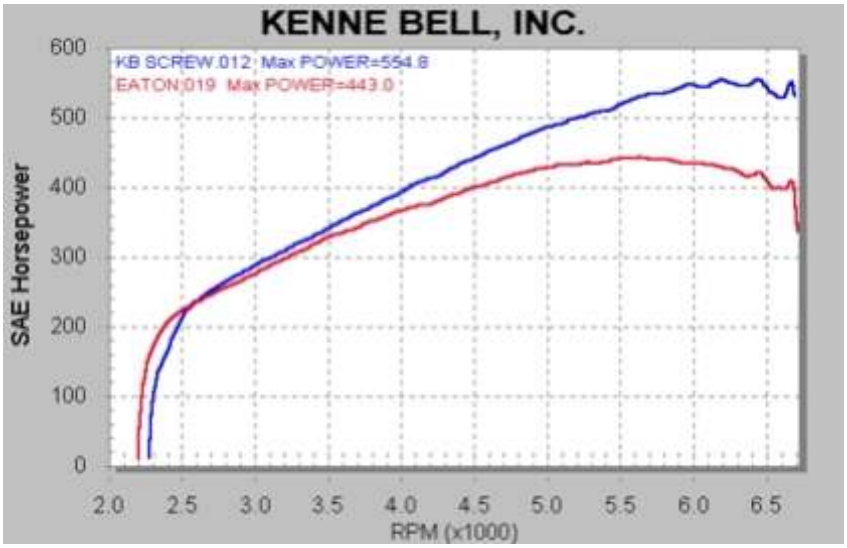
Yes, between 3500 and 6500 rpm the Eaton boost dropped from 13.5 psi to 9.5 (-30%) at 6500 whereas the Kenne Bell increased from 13.5 to 16.1 (+19%) at 6500. That's a big feature and advantage of the Kenne Bell Twin Screw concept and a definite Eaton shortcoming. That's just the way it is. The juggling of unrelated dyno tests doesn't change the facts, it merely distorts them at the expense of those using the forums as a source of information.

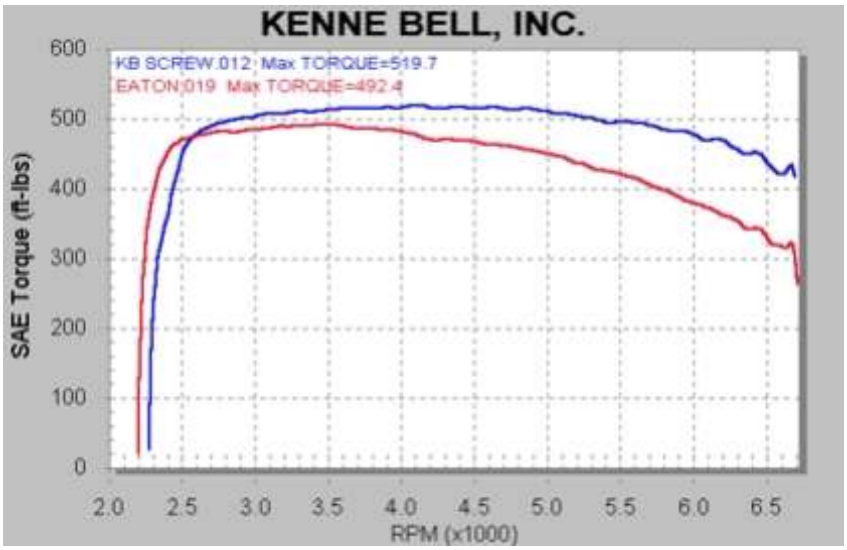
These dyno results provide a more accurate comparison between the Eaton and Kenne Bell.

If you plan on rating a supercharger on boost with +2's, +4's, etc. pulleys, you should pick an rpm. We always try to use 2000-2500 to 6000-6500 for most of our comparisons, and then publish all the boost ratings and hp/tq numbers. Note how much more tq and hp the Kenne Bell produces, even in the lower rpm range at the same boost, before the Eaton boost begins to really

fall off above 4500 rpm. Most of the apparent increases of the Kenne Bell supercharger are due to two factors; 1) lower parasitic loss (engine hp required to drive the supercharger) than the Eaton, and 2) higher volumetric efficiency / boost . Our supercharger typically requires 30% less power to drive than an Eaton, with the Eaton getting progressively worse on parasitic loss, heat and volumetric efficiency / boost as rpm increases.

Our "Cobra Boost / Ratio / HP Guide" at http://www.kennebell.net/superchargers/ford/cobra03/cobra03-tech.htm claims exactly 560 rwhp with the 3.25" pulley - and that's SAE, not STD. We don't make up





numbers in any of our “Tech and Tuning Tips”. We do our best to publish accurate, repeatable and documented test results. For you serious “Tech Heads”, yes there is a 1.8 psi loss (drop) through the intercooler at 600 rwhp SAE. We quote numbers (boost) based on what actually reaches the engine, not out of the supercharger.

As we’ve mentioned in other posts, one of our main goals at Kenne Bell is to help educate our customers about our products with factual data, tested under controlled conditions. We will continue to respond when we feel misleading or false information is being presented about Kenne Bell or its products, or our customers request clarification.

Yes, the “ported” Eaton will soon be tested where conditions are controlled and data logged on our own dyno. Parasitic losses, temperatures, boost, hp and tq will all be compared to the Kenne Bell. And, no, the Kenne Bell cannot be improved upon by “porting”. The inlet is a billet CNC machined (ported) entry already. The outlet (discharge) is also a ported CNC machined opening from the extruded billet aluminum rotor case. Both were optimized on a supercharger flow bench.

Also, there seemed to be considerable discussion about Kenne Bell vs Eaton torque. The car in our test was punched at ~ 2200 rpm. Don’t count on or expect the Kenne Bell to ever drop off or lay down. As can be seen from the Tom Wilson tests, the Eaton will never match the torque output of a Kenne Bell at any rpm, given the same boost. Both superchargers produce the same boost up until about 3500rpm, where at that point, the Kenne Bell requires progressively less hp to drive. That shows up on the dyno.

Also note how the higher parasitic loss and boost drop-off of the Eaton causes it to continually fade away from the Kenne Bell.

Hopefully, this is the real test many of you have asked for: same car, same tune, starting at the same boost (13.5 at 3500rpm in this case), fixed timing (22 deg), fixed air/fuel ratios (~12:1 in both cases), all data logged, documented, and backed up by a credible third party (Tom Wilson of 5.0 Mustangs and Superfords magazine).

Regards,

Jim Bell