

SUPERCHARGED THRILLS RIGHT OUT OF THE BOX

ADD A BOLT-ON BLOWER FOR INSTANT HORSEPOWER

TEXT AND IMAGES BY BARRY KLUCZYK



Bolt-on performance has come a long way since the days of headers and slapper bars. That's especially true of late-model Mustangs, as installing a blower is now little more complicated than swapping an intake manifold.

Such is the case with the Kenne Bell twin-screw rotor supercharger systems. For New Edge Mustangs, they represent tremendous performance potential and relative ease of

installation. That's not to say centrifugal systems, such as the tried and true Vortech or ATI ProCharger compressors, aren't big power makers, but there's a little more plumbing involved. With the Kenne Bell systems – reportedly derived from industrial air compressors – the blower unit sits atop the engine, much like the old-school Roots-type supercharger.

One man who has seen the light with the twin-screw setup is

01: The SOHC 4.6-liter engine of New Edge Mustang GTs is rated at 260 horsepower. It's a smooth, high-revving engine that, unfortunately, doesn't produce a lot of low-end power. It's also quite torque-deficient — just the areas a supercharger can address and improve.

02: This is how the Kenne Bell 1700-cc supercharger system for the GT comes: pre-assembled and ready to go. The same goes for most of K-B's other off-the-shelf systems. This makes installation a much easier proposition, as the blower and intake manifold are already joined.

03: Kenne Bell's supercharger systems are inter-cooled, too, and come with an heat exchanger core that mounts under the bumper to draw cooler air.

04: It looks like an amplifier and that's what it is, but it's not for the stereo system. It's a "boost-a-pump" that amplifies the voltage to the fuel pump to coax more power from it and, consequently, increase fuel flow under boost.

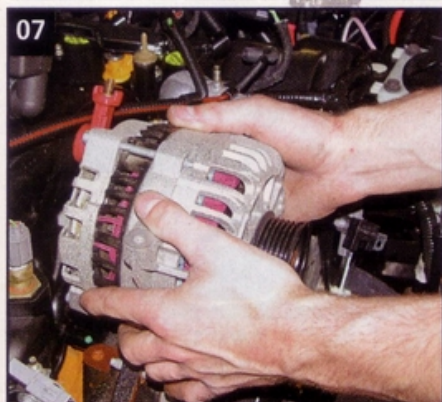
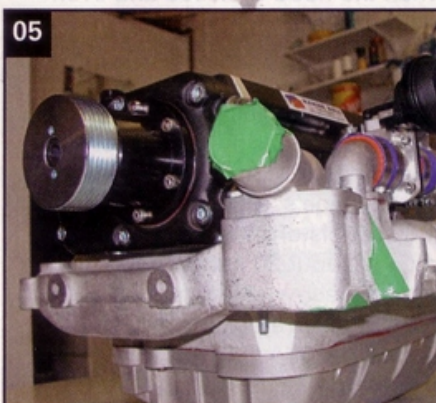
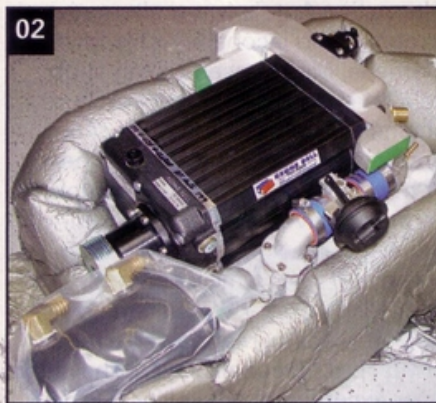
05: A close-up look at the Kenne Bell compressor/intake manifold setup reveals a modified factory Cobra lower intake manifold, with the compressor bolted to the top. Inside the deep-draw manifold is, like the factory-supercharged setup, a compact intercooler core.

06: As with any supercharger installation on a stock vehicle, the project starts earnestly with the disassembly of in the way or no-longer-needed components. Conveniently, there aren't a lot of parts to remove from the Mustang's engine compartment.

07: One item that needs to be removed yet retained is the alternator. To make room for the supercharger drive system, it will need to be relocated and turned around.

08: Another convenience of the project is the lightweight, composite-material intake system, which can be removed with the injectors, fuel rail and throttle body all as a single unit.

09: It's imperative to inspect the valley after the stock intake is removed and study the kit's directions carefully. Some 4.6 engines have cast-in bosses that must be cut off to accommodate the supercharger system's manifold. Such was the case with engine of the project car we were following.



Alternative Auto's (www.alternativeauto.com) Lidio Iacobelli. At his Mt. Clemens, Mich.-based tuning shop, he's been hanging blowers on Ford engines since the days when "Achy Breaky Heart" was stuck in the heads of mall cowboys. In the last couple of years, however, he's been experimenting with the twin-screw compressors – specifically, Kenne Bell systems – and likes the results he's seen.

"They make great power, even at lower rpm," Iacobelli says. "They also offer exceptional drivability. For daily drivers, you hardly know it's there until you get on the throttle."

We recently followed along as Iacobelli's techs performed a couple of blower installations on late-model Mustangs. One was a standard GT and the other was Iacobelli's own Oxford White '04 Mach I. It was a good comparison, as the GT received the street-friendly 1700-cc compressor, while Iacobelli chose the larger-displacement 2200-cc blower for this strip-bound Mach I. The K-B 1700 blower is good for 6-9 pounds of boost out of the box, but can be "pulled" to about 12-14 pounds. With careful tuning, this all works just fine on pump-gas street cars – despite the SOHC 4.6's relatively high compression ratio. At the low end, a 6-psi squeeze will add about 100 horses, but more like 250 horses are possible if you can ring 14 pounds out of the 1700. That effectively doubles the output of the factory's 260-hp rating.

The 2200 blower delivers the same tractability and drivability as the 1700, but it's capable of shoving up to 20 psi into the intake ports. On the Mach I, which uses the old, non-supercharged four-valve Cobra engine (circa 1999-2001), the 2200 can provide a little more than 20 pounds of boost. Keeping the engine from detonating itself to death generally requires gasoline of at least 100 octane. There's even a 2400-cc competition model that definitely requires a specialty diet of fuel, spark and timing.

We've sampled a few of Alternative Auto's Kenne Bell-blown Mustangs and were impressed with the relative quiet and ease of the driving experience. Particularly with automatic-equipped cars, there's almost no hint

to the underhood enhancement until your right foot goes flat on the floor. And while some find the constant whir of a centrifugal blower music to the ears, others find it more akin to the sound of a failing water pump. For those in search of more quiet – and stealthy – approach, the K-B blowers are the way to go. There is, however, an intoxicating wait at full throttle and those rotors get spinning to tens of thousands of rpm.

As we mentioned, Iacobelli intended his Mach I for the racetrack. In fact, he had a specific goal: run 10s on an otherwise stock motor. For that matter, he would use the stock transmission and rearend, with the only significant upgrades being an aluminum driveshaft, Mega Bite Jr. lower control arms, a little ECM tuning and a cat-back exhaust system. Yes, Iacobelli even planned to run through the stock exhaust manifolds.

Fitting the blower to the Mach I engine wasn't difficult, but securing the car's factory shaker scoop system was. A scratch-built set of brackets was created to hold up the scoop in the stock location. It looks original when the hood is closed and even requires a second glance to spot the blower under the scoop when the hood is raised.

With a little tuning and custom, smaller-diameter pulley – a definite balancing act, considering the four-valve engine's 10:1 compression ratio and cast pistons – Iacobelli was able to coax about 20 psi from the blower and 538 rear-wheel horsepower from the otherwise stock engine. Think about that for a moment: 568 horsepower and 536 lb-ft from a bolt-on blower kit – that's nearly 300 horses more than stock configuration's 265 rear-wheel output.

Iacobelli indeed got his 10-second time slip, all right – on drag radials, no less. But the 10.89 seconds/132 mph pass came at a price; on the back-up run, the car went through the traps in the 10s again, but the cast reciprocating assembly wasn't up to the crankcase's additional pressure. The engine kicked out a rod, but the point was made: add a 2200 blower to a four-valve Mach I or Cobra and you've got the capability of running 10s in an otherwise stock street car.

10: Modern gasket technology means that, if you're careful, even the intake manifold gaskets can be re-used. No messy beads of RTV here!

11: The Kenne Bell supercharger assembly is considerably heavier than the stock intake and definitely requires two pairs of arms to lower straight down into place. In fact, that's one consideration to take in with this bolt-on project – the whole system will add almost 45 pounds to the nose of your Mustang.

12: Kenne Bell includes a custom bracket for the alternator, which mounts it in the reverse position from stock, lining up the pulley with the supercharger drive system.

13: Although not necessary for base 1700-cc systems, it's not a bad idea to slip in a set of higher-capacity fuel injectors before transfer of the fuel rail to the new manifold. Thirty-six-pound or 42-pound injectors are good for 400-500 horses. Iacobelli was aiming for 600 hp on his Mach I, so he added 60-pound squirters.

14: A re-calibrated mass-air meter will probably be required, too. All the extra air rushing in will "peg" the stock meter's range and limit performance.

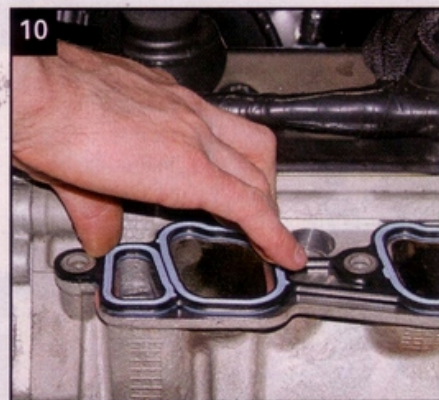
15: The heat exchanger mounts under the front bumper cover, but it's not exactly as easy as it seems. The high-strength steel of the bumper is a tough nut to crack or, at least, drill. Several fine drill bits gave their lives so that this core could be bolted up.

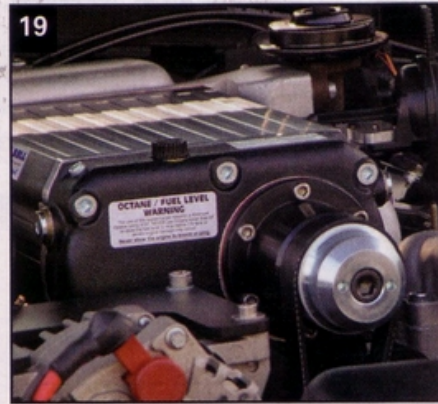
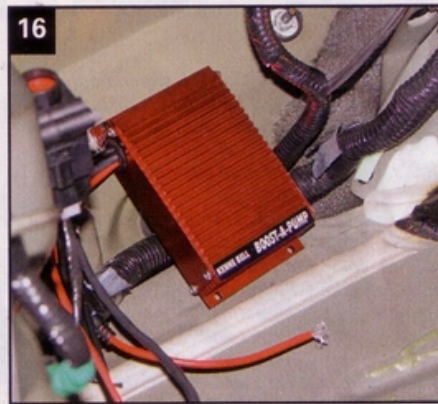
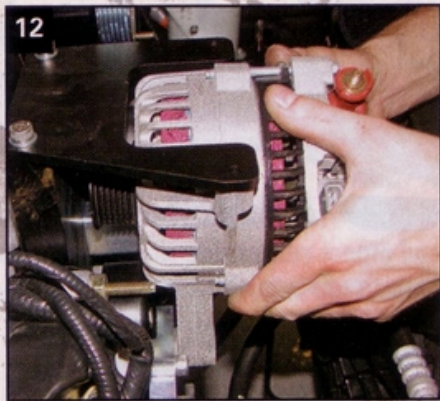
16: The Kenne Bell boost-a-pump mounts in the trunk and is a simple hook-up. The benefit is a higher-charged fuel pump signal, when needed, and more fuel under boost conditions.

17: With the basic installation complete, the car goes to the dyno for tuning and a few runs on the rollers. At about 8 pounds of boost, the 1700 supercharger is good for almost 150 rear-wheel horsepower.

18: Every supercharged car needs a boost gauge, right? Auto Meter offers a great dual-pod insert for the stock instrument cluster (gauges mounted at opposite lower corners of the cluster), so there's room for the boost gauge and, say, a fuel pressure gauge.

19: Here's a look at the installed K-B 1700-series supercharger. It nestles down into the engine compartment with a hint of hood clearance problems. The compressor is quiet until wound up, where it makes wonderfully shrill scream. It just sounds like power.





Industries
Blue Oval
Industries
Specializing in Late
Model Mustangs
1-866-686-2583
www.BlueOvalindustries.com

NorthCoast NTHCOAST.COM
Mustang & Ford Specialists
(585) 216-1210
With the 2005 Mustangs
hitting the street make
Northcoast Performance your
2005 Mustang part source!!
STEEDA **Ford**
PERFORMANCE PARTS
NorthCoast Performance
265 David Pky • Ontario, NY 14519

15+ extra horsepower
with an **ELK Performance**
Supercharger Belt Tensioner.
Fits most 86-93 Vortech
Supercharged Mustangs
and some other applications.
Easily and efficiently
maintain optimum
Supercharger belt
tension for maximum
performance.
\$55.95 + S & H
Now offering Powder Coated lightweight
Aluminum Chassis Bracing: Strut Tower Braces and
Rear Shock Tower Braces. **Custom Colors Available.**
FEEL THE POWER!!
ELKPERFORMANCE.COM
Phone# 212-688-5600

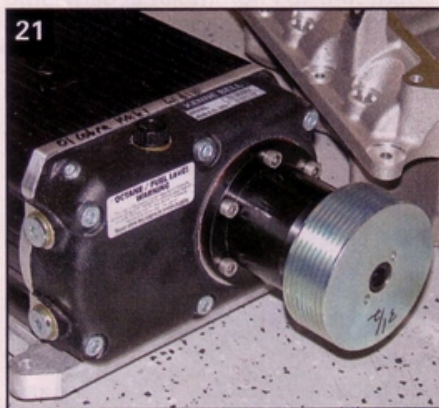
20: If adding a supercharger to the 260-hp SOHC 4.6 is good, the prospect for the two-cam, four-valve engine found in the Mach 1 is even more tantalizing. Alternative Auto's Lidio Iacobelli figured the engine with a blower lashed to it – and 4R75-E automatic – had the credentials to pull the car down into the 10s.

21: Iacobelli's idea to run the 2200-cc blower on the Mach 1 motor was not a combination offered by Kenne Bell at the time (late 2004), so it was put together from scratch. But, the parts are all off-the-shelf stuff, including the factory Cobra lower intake. A pair of Cobra fuel pumps also was added to the Mustang's fuel tank to ensure adequate fuel supply through the 60-pound injectors.

22: The stock aluminum shaker scoop was cut, trimmed and fitted with custom brackets that mounted to the blower case and intake manifold.

23: With the scoop fit atop the supercharger system, it pokes through the hood just like stock. Alternative Auto was pleased enough with the relative ease of the installation that they now offer similar setups for all customers.

24: So, will an otherwise stock-engine Mach 1 run 10s with only a bolt-on blower and a cat-back exhaust? Yes. But, the cast reciprocating parts proved a little too delicate. If you're contemplating a similar setup, it's a good idea to invest in forged pistons and heavy-duty rods first. Otherwise, add some 100-octane to the tank and you'll soon get booted for running too quick without a roll cage. Such a problem!



Iacobelli has since rebuilt the engine with forged rods and pistons and reports not a lick of trouble – and he plans on bettering that 10.89 ET on the otherwise stock-spec 4.6.

Even the 1700 blower should help get most street-bound 'Stangs into the low 12s or high 11s. This is phenomenal performance for what is truly a bolt-on project. You don't have to pop off the heads, swap the cam, port this or polish that. The next time you're at the drag strip, check out the Lexan-windowed, fiberglass-nosed, stripped-interior Dusters and Malibus that are running – what? – 13s, 12s or maybe even high 11s. Even just 10 years ago, this was "off highway" performance. Heck, 25 years ago it would have been the stuff of boastful street racing lore.

Today, however, the performance capability of the 4.6 engine and a simple, bolt-on blower allows the best of both worlds: mind-bending power and acceleration with daily drivability. The accompanying photos don't show every detail involved in installing a Kenne Bell supercharger, but they provide an overview to the project. What you should take away is the relative simplicity of the procedure. And while the installation isn't out of the realm for competent wrench turners, novices will probably want to seek the assistance of a shop like Alternative Auto.

Either way, you'll enjoy the first time at the track when you dust off that clapped-out Duster, but don't be surprised when the guy in the timing shack tells you the car is too quick and needs a roll bar to run again.

Not bad for your commuter Mustang. **XM**



SOURCE:

Alternative Auto Performance
145 Malow, Unit D
Mt. Clemens, Mich. 48043
(586) 463-0010
www.alternativeauto.com

Kenne Bell
10743 Bell Court
Rancho Cucamonga, Calif. 91730
(909) 941-6646
www.kennebell.net