

What would a motor swap and forced induction install be without some backyard wrenching with friends? Jerrid Wood and Jeremy Stanton help us throw the new smog-legal motor in our little boost coupe.

# SMOG-LEGAL KILLER

WE BUILD AN EMISSIONS-FRIENDLY, 11-SECOND, 420HP MUSTANG THAT PLAYS BY THE RULES AND STILL HAULS THE MAIL.

BY JUSTIN FIVELLA / PHOTOS BY THE AUTHOR

**W**hile the luxury of adding long-tube headers, ditching the catalytic converters, and using a power adder might be second nature to many gearheads, for others it's not even an option. In fact, consider yourself fortunate if you're able to modify your late-model Ford any way you please, because in some states aftermarket parts on a street car are

a one-way ticket to steep fines and the impound yard. It might sound like something from a sci-fi flick, but it's a reality for many enthusiasts who drive modified modern muscle in a smog state.

If your state has emissions testing, you know the pain. Worried is the first word that comes to mind. When not fretting about returning your car back to stock for the next smog check, you're usually looking over your shoulder in fear of being busted

for non-emissions parts. Admittedly, there are gray areas, but in a few states if you're caught without smog-compliant parts, you could be facing thousands of dollars in fines and up to 30 days of impound. In other words, if you live in a smog state, in some cases a modified street car can be more hassle than it's worth.

While many owners break the rules, in reality they're just asking for trouble—as they say, it's only a matter of time. But what are you to do,

leave your car stock? Not a chance, you just have to know the rules.

After dodging the local authorities because of the illegal (i.e., non-emissions-compliant parts) under our hood, we decided it was time for a change. Could we build a Stang with respectable power and still pass emissions? We knew it wasn't going to be easy since a big cam, race heads, long tubes, and other go-fast parts were off the table—but we were certain that with the right combo it would still make solid power despite the smog-related compromises.

## SMOG 101

The last time we counted, over 10 states have emissions testing. And while each state has slightly different laws, none are horsepower-friendly. Some states have stricter standards than others, with California taking the cake thanks to its stringent regulations. With that in mind, we decided that building a car to pass the strictest of the states was our best bet. If it passed muster in California, it was safe anywhere.

To get an idea of the severity of the emissions testing California residents must meet, dig this: Road-going vehicles must retain all of their factory emissions equipment, like the smog pump, EGR, and crankcase ventilation system, and all catalytic converters must be in the stock locations. You read that right—if you move your cats downstream or delete a pair, it's an instant fail.

In addition to a visual inspection of all the parts, the car is "sniffed" by a computer on a rolling dynamometer at different speeds to measure its unburnt hydrocarbons and NOX gases. Too lean and you'll fail; too rich and you're out. Get a Check Engine light and you're done. Heck, the gas cap is even checked to make sure it seals. In other words, it's not an easy test to pass. In addition, all aftermarket parts must be C.A.R.B.-compliant or they're deemed illegal.

## THE CAR

As for our particular example, it's a former California Highway Patrol LX coupe with a T5, radio delete, and crank windows—a stripper, just the way we like it! When we took possession of the weathered coupe, it had 270,000 miles (yeah, you read that right—over a quarter million) and according to the previous owner, it still had the original motor. In true Fox-body fashion, it had the typical mods like a '93 Cobra intake, throttle body, and roller rockers, along with



Here are the internals of the Coast High Performance 50-state, smog-legal 347e short-block. The forged 14.2cc dished pistons, cast crank, and CNC beam rods are good for over 550 hp.



In addition to a special camshaft that makes the 347e smog-legal, it also comes with unique 5.315-inch rods for a dry-ring design that cuts down on oil consumption and emissions compared to the popular 5.400-inch variants. Note that the ring placement on the left piston, made for a 5.315-inch rod, is moved away from the wristpin area compared to the 5.400-inch unit on the right.



Shawn Mendenhall of Coast High Performance torques the ARP rod bolts on our 347e smog-legal short-block just after adding the in-house main rod-bearing girdle. At the power levels we intend to reach, a girdle is cheap insurance.



Don't forget to swap the stock distributor gear for the correct unit when installing a new cam—we used a Comp Cams composite version. Another note about aftermarket stroker motors; it's a good idea to drill a small hole in the oil galley to dump oil on the distributor gear to keep it cool. We didn't have to worry about the process since CHP had already done it for us.



Summit Racing came to the rescue on many parts for the build and this Cloyes timing chain is just one of the many. While a Cloyes unit may cost a few more bucks than a stocker, it's a good investment.



A Milodon 8-quart oil pan kit and a Melting high-volume oil pump were also supplied by Summit Racing, since our stoker motor is going to require plenty of fresh oil to keep it cool.

Call us cheaters, but we had to blur the lines somewhere. Since the supplied camshaft with the short-block wasn't ideal for boost, a Comp Cams 284 HR blower cam and lifters were called into action. It still passed smog, made great power with tons of torque, has a nice power idle, and specs out at a boost-friendly 224/230 0.533/0.544-114.

a C&L MAF, Ford Racing Performance Parts (FRPP) shorty headers, BBK catted H-pipe, 3.73 gears, aluminum driveshaft, Ram clutch, and Pro 5.0 shifter. It didn't make big power, but at 2,940 pounds it didn't have much mass to move either.

**OUR PLAN**

Since passing emissions regulations was just as important as making big numbers, there had to be compromises on either end. Unlike other builds solely concerned with power, we'd have to give up some horsepower for emissions' sake, while also blurring the lines of smog while still legitimately passing the strict test.

In other words, comparing this build to a non-emissions combination is an apples-to-oranges comparison since playing by the smog rules robs serious power. We weren't trying to break any records and knew we'd have to throw more parts at it than a non-emissions build to make the same power, but staying legal was a must.

Thankfully many companies have already spent the R&D and developed smog legal go-fast parts so enthusiasts in all 50 states can have some fun. A detailed look into our options revealed the best method of

staying legal and making power was more displacement, a good set of emissions-friendly cylinder heads, the right camshaft, and forced induction. If you're going play by the rules, you have have to try a lot harder.

Since building your dream car takes time and money we decided to add an interesting twist. With forced induction as our ultimate goal we built a boost-friendly motor, but instead of rushing right into the boost we dyno and track tested the low-compression motor in naturally aspirated form.

Footing the bill for a motor and forced induction all at once can be daunting, and instead many people build their motors long before they add boost. And we wanted to show that even a mismatched combo can still be fun in the meantime. It's unorthodox, we know, but the alternative is parking your car until you have the coin, and that's no fun.

**PARTS PLUS**

Much like a high-horsepower naturally aspirated combination needs to be perfect, playing by the emissions rules means all of the parts must work in unison. There's only so much we can do with our emissions-friendly

cam specs, exhaust system, intake setup, and the like, so everything had to be maximized.

No motor is complete without a short-block, and thankfully Coast High Performance (CHP) offers a smog-legal alternative. This bad boy is known as the 347e, and it's the only California Air Resources Board (C.A.R.B.)-approved, 50-state legal short-block on the market.

CHP has long been known for its quality engines and components at the non-emissions and race levels, but it also offers this mean and green stroker. Anchored around the same tried and true components found in its other bulletproof short-blocks, the 347e differs from the rest with its included camshaft and the unique 5.315-inch rods. CHP offers their 347 kits with 5.400- and 5.315-inch rods, with the latter allowing for a dry-ring piston design to cut down on oil consumption and emissions.

Inside the block are Probe SRS forged 14.2cc dished pistons, a cast crank, and matching CNC-beam rods for a stout combo that's good for 550 hp. The supplied camshaft is a hardy unit, but still remains emissions-friendly.

While some question how a police



It's the small things that go a long way and adding pieces like an ARP oil-pump shaft is key to a pumped-up engine's longevity. Note how much bigger it is than the stock unit.



Rankin Performance Machine was commissioned to assemble the motor since quality parts mean nothing without a proper installation. Here John Rankin is dialing in the Ford Motorsports timing cover. Without the proper alignment, the front bearings will quickly burn up.



A Summit Racing Supercharger-spec harmonic balancer was the perfect 28-ounce addition to the motor, along with a Ford Racing Performance Parts timing pointer. Note that a spacer must be used to mate the balancer to the Fox-body accessory drives; we used an FRPP unit (Summit PN FMS-M-8510-B351).



Fel-Pro PermaTorque 1133 MLS head gaskets ain't cheap, but they're beyond strong and a must for any forced-induction build. Again, spend a little more up front to save it in the long run since replacing blown head gaskets is PITA.



Behold the all-new AFR Renegade 195 emissions-legal heads that flow a massive 317 cfm at 0.650 lift. They not only have solid low- and mid-lift numbers, but they out flow the outgoing 205cc models.



The 195s feature full factory-CNC ported runners and combustion chambers. See inside—that's the kind of quality we've come to expect from AFR. The valves measure 2.05-inch intake and 1.60-inch

officer or smog shop would even detect a non-compliant stroker, we admit they wouldn't likely catch it. But having the 5.315-inch rod keeps oil consumption and emissions down, so legitimately passing emissions tests for tens of thousands of miles won't be a problem.

With more cubic inches, a good set of free-flowing heads was a must... oh yeah, they had to have all the smog provisions as well. Thankfully Air Flow Research (AFR) just released its new line of heads, and one of the hottest additions is the 195cc Renegade. These killers are the real deal, thanks to full factory CNC-ported on the intake and exhaust runners as well as the combustion chambers. Massive 8mm 2.05/1.60-inch valves coupled with the steep 20-degree intake valve angle help these heads flow 317 cfm at 0.650 lift—more than the outgoing 205 head.

The all-new 195 heads are not only emissions-legal, but they're made for developing serious power thanks to a 3/4-inch-thick head deck that's perfect for forced induction and nitrous. These high-flow hogs come in 58- and 72cc versions with 70cc exhaust ports and are intended

for 331-392ci motors spinning in the 2,000-7,000 rpm range. As expected from AFR, low-lift and mid-range numbers are impressive despite high-lift numbers that are racecar strong. We opted for the 58cc versions; when paired with our Fel-Pro gaskets and the dished pistons in our CHP 347e short-block, we arrived at a boost-friendly 9.6:1 compression ratio.

Of course the right camshaft is also crucial and a quick call to Comp Cams helped with a cam, lifters, and spider valley tray kit. Remember when we said we blurred the lines here and there, well this was one area we felt compelled to fudge. While the supplied CHP smog-legal cam is nice, its specs (212/222 0.491/0.509-112 LSA) weren't ideal for our boosted intentions so we opted for the Comp 284 HR blower cam. OK, call us cheaters, but the car still passed smog with flying colors!

With specs of 224/230 and 0.533/0.544-114 LSA, it's better suited to our blown intentions. The wider lobe separation is better for boost, as is the exhaust heavy numbers and the fact Comp opens the exhaust valves much sooner on the blower cams so spent gases can leave in a hurry.

To get the most out of the valve-

train, a set of Trick Flow Specialties 1.72 aluminum roller rockers and Comp Cams Hi-Tech pushrods were used to tickle the valves. While the massive roller rockers necessitated tall valve covers, and eventually a 1-inch phenolic spacer to solve our clearance problems, the lightweight rollers gave us that extra bit of lift and cut down on reciprocating weight. Topping the engine is a TFS Street Burner intake manifold, BBK 75mm TB with EGR plate, 76mm MAF and an adjustable fuel pressure regulator (FPR).

When it came to assembling the short-block we turned to none other than Rankin Performance Machine. After all, it doesn't make sense to gather the best parts and then ruin them with an untidy assembly. John Rankin opted for a host of ARP hardware and Fel-Pro gaskets—quality fasteners and gaskets is money well spent. Some of the ARP goods included a 7/16x14-inch Pro Series head stud kit; 7/16-20, 1.90-inch rocker stud kit; oil pump driveshaft; harmonic balancer bolt; and intake manifold bolts. As for the Fel-Pro lineup, Rankin insisted on a set of the Fel-Pro 1133 Perma-Torque MLS steel head gaskets and a matching set of intake manifold and water pump gaskets to seal up the



It's important to always check the piston-to-valve clearance since forgetting to do so can instantly ruin a new motor. The Probe Industries dished pistons left us with plenty of room.



Finally, the mating of the AFR heads to the CHP stroker short-block. Also, note the massive ARP 7/16x14-inch Pro Series head stud kit that will keep everything secured in place under big boost.



Some might consider the ARP 7/16-20, 1.90-inch rocker stud kit a bit overkill, but it's added insurance when spinning the motor over 6,000 rpm. After setting the rocker alignment we welded and numbered the AFR guideplates to lock them in place.



Trick Flow Specialties aluminum, 1.72 roller rockers helped keep valvetrain weight at a minimum and offered a little extra lift. It's a shame they're buried under the valve covers because they're pieces of art.



Summit Racing 30-pound injectors fed the 347 stroker motor in naturally aspirated form while another set of 42-pounders did the job with the blower. Don't forget to grease them before installing them in the rail.

Summit Racing water pump.

As with any engine, it's the small stuff that easily adds up and thankfully Summit Racing not only stocks more parts than the population of Maine, they also have affordable overnight shipping (don't ask us how we know). Summit Racing came to the rescue with a host of important parts like the in-house brand supercharger-spec, 28-ounce harmonic balancer; Milodon 8-quart, dual-sumped oil pan; dip stick; pan gasket; and pickup kit, along with the Melling high-volume oil pump. Of course no proper motor would be complete without a Cloyes timing chain. Yup, Summit had that too, and an FRPP timing cover and timing pointer as well.

Fueling the beast wasn't going to be an easy task so we again turned to Summit Racing for the answers. It came in the form of a TFS 255-lph in-tank pump and two pairs of Summit Racing injectors, 30-lb/hr units for the NA setup and 42-pounders for the forced induction plans.

On the exhaust side, we relied on BBK 1½-inch, ceramic-coated headers and a matching 2.5-inch, catted X-style mid-pipe. In order to keep it legal, we paid a visit to another local legend, Mel & Sons Mufflers where the go-fast crew quickly added a pair of 2.5-inch Magnaflow cats in the stock upper-cat location. It also didn't hurt that they helped us sort out a few self-inflicted fitment issues.

We left the power planting duties to a SPEC Stage 2 clutch and pressure plate along with a matching light-weight flywheel. The clutch bit hard at the track but offered street manners civil enough for daily driving. The lightweight flywheel also made re-matched down shifts a dream. Sticky Mickey Thompson ET Street Radials were the last connection between our horsepower and the road and these soft rollers offered enough bite to break a stock axle—whoops!

When the new bullet was ready, we turned to BRG Racing for help removing the old engine and plenty of tuning advice on the dyno. KC Gager, Chris Doig, and the crew at BRG Racing have a knack for building fast race cars, and their expertise came in handy throughout the build.

As mentioned earlier, the pursuit of power took us to a set of TFS 1.72 roller rockers that were too big to fit under standard valve covers. Thankfully Coast High Performance had a set of polished Venom tall covers that swallowed the big rockers with ease. Of course, the tall covers then hit our TFS intake manifold, so naturally a

1-inch phenolic spacer was added—problem solved.

Not. The stock hood no longer cleared so a cowl hood was in order. But we didn't want just any old hood, steel was too heavy and fiberglass is too common. Carbon fiber is nice, but too expensive. How about aluminum? We thought it was a long shot, but Auto Metal Direct came to the rescue with its 2-inch aluminum cowl hood that is truly one of a kind. This quality piece fits like factory, uses the OEM mounting hardware and weighs a svelte 17 pounds. We shaved 25 pounds over a stock unit and the AMD hood doesn't flutter and flex in the wind. We'd consider that a win on all fronts.

## **BIG-TIME BOOST**

With the stroker motor bolted safely between the rails and enough break-in miles to deem it and the new clutch safe, it was time to get down to business. And by business we mean boost from a Vortech V3 SI supercharger kit. This High Output non-intercooled kit features the new V3 self-lubricated supercharger that doesn't require the drilling and tapping of the factory oil pan for lubrication like some of the other units. The V3 SI blower is rated at 775 hp, 22 psi and can easily huff over 1,150 cfm, so there's plenty of room left to grow.

While some prefer the familiar whistle of straight-cut gears on a centrifugal blower, we were after some sleeper status and thus opted for the helical cut gears to keep the noise at bay. The HO kit comes pulled for 10 psi and includes everything needed to make big power; like a fuel management unit (FMU), all of the associate piping, a diverter valve, belt, crank pulley and even an in-line T-Rex fuel pump.

Installation was easy save for our taller valve covers causing a clearance issue with the supplied intake portion of the blower kit. A quick call to Turbo Hoses netted us a pair of silicone 90-degree elbows and a coupler that Rankin Performance cut and welded for the perfect fit. The Summit 42-lb/hr injectors were a good idea for safety's sake, but they were so big that the Vortech FMU was ultimately deemed unnecessary. Instead, the BBK adjustable fuel pressure regulator is actually boost referenced at a 1:1 ratio. The proper AFR was achieved by directly tweaking the FPR. Had we gone with smaller injectors, the supplied Vortech FMU would have been perfect.



A Trick Flow Street Burner intake manifold topped our stroker motor and kept us legal with the smog enforcers. The long-runner design is good for big torque down low long before boost rolls in.



It pays to know somebody that can fabricate and John Rankin had to fab a few things for us along the way. Our big roller rockers and tall valve covers required a custom throttle linkage.



The 76mm BBK MAF allowed us to swap MAF cards for both the 30-pound and 42-pound injectors. It's important to spec your MAF to your injectors or your car will never run correctly.



During our normally aspirated runs a BBK cold-air intake provided the lungs for the dyno. The black finish looked great under the hood and it produced a wicked intake honk under WOT.



OK, so a BBK adjustable fuel-pressure regulator isn't exactly emissions legal, but it looked so at home that the car still passed the test. We used it to tune the air/fuel ratio both in NA and boosted form. For a quick bit of trivia, the unit is also boost referenced at a 1:1 ratio so as boost rises so will the fuel pressure. This came in handy when dialing in the blower setup.



Since the BBK catted, X-style mid-pipe only comes with two cats and you need four to remain smog-legal in California we paid a visit to the go-fast crew at Mel & Sons Muffler. They welded in a pair of Magnaflow 2.5-inch, high-flow converters upstream of the BBK cats.



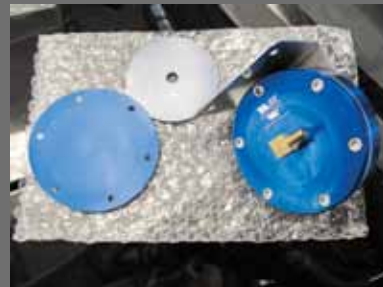
Smog laws got you down? Forget about it, the Vortech V3 SI High Output kit is emissions legal and rated up to 775 hp. The head unit also comes with internal oiling so taping and drilling your oil pan are things of the past.



Here's an insider trick Rankin Performance Machine shared: dialing in the bellhousing. Never heard of it? Neither had we. But it's crucial to get the bellhousing aligned to the motor or you'll quickly burn up the rear main seal and even the crank! Don't believe us, do a quick Internet search and see for yourself!



With all the extra incoming air more fuel was a must. A Trick Flow 255-lph in-tank pump was added and it fit like factory. Don't forget to tighten the band-clamps on the lines since you don't want them coming loose inside the tank.



The Vortech kit comes with an FMU that can be tuned with special disks depending on the size of your injectors. It raises the fuel pressure based on the boost.



A SPEC Stage 2 clutch, pressure plate and lightweight flywheel kit was responsible for putting power to the pavement. The feathery flywheel did wonders for throttle response and the clutch bit hard but still offered enough modulation for street duties.



Since the Vortech blower pushes so much air, an inline T-Rex fuel pump comes with the kit. It mounts on the underside of the car and along with the Trick Flow 255 in-tank pump should flow serious amounts of fuel.



Forget the long-tube headers and catless pipes, in order to pass smog we had to run shorties. Thankfully the BBK 1½-inch, ceramic-coated, unequal-length units were top notch.



Earl Norager of BRG Racing helped us remove the weathered old motor. After 270,000 miles, the old steed still had some life left in it, but not enough for our appetite. Out with the old and in with the new!



Our CHP tall valve covers were just a tad to steep for the supplied Vortech intake kit. A trip to Turbo Hoses netted us some 90-degree silicon elbows and a coupler.

**ROLL IT!**

To ensure our money was well spent, we again turned to BRG Racing for dyno time and tune tweaking on its in-house Mustang dyno. We understand that many people use Dynojet, which can read higher, but instead of focusing on the outright number, we were after the gains.

In stock form with full bolt-ons, our 270,000-mile coupe put down 226 hp and 270 lb-ft at the tires. Although torque was impressive, the show was over by 4,500 rpm as the stock heads and cam ran out of breath.

Although it was unorthodox, we strapped our stroker on the dyno without the blower. While the motor wasn't built for naturally aspirated numbers, out of curiosity we wanted to know what it was making without the extra air. Much to our surprise, the combo made an impressive 313 hp and 340 lb-ft for gains of 87 hp and 70 lb-ft at the tires. The boost motor made huge torque, as it stayed over 300 lb-ft from 3,300 rpm to redline. We didn't expect big power, but the curve was pancake flat from 4,500 rpm to redline.

Finally the moment we all were waiting for—the boosted pulls. After filling up with 91-octane fuel we again turned to Chris Doig to help us tune the Vortech setup. Using nothing more than the BBK FPR, the stock distributor and the Vortech-supplied MSD boost-timing module we set out to make power the old-school way.

Truthfully we left significant power on the table by not opting for a chip tune, but we wanted to run the kit in out-of-the box form. After lots of tweaking, we settled on a base timing of 10 degrees, the MSD BTM set at 1 degree of retard per psi, and the fuel pressure at 48 psi at idle for an AFR of 10.8:1. Sure, the AFR was on the rich side and there was more left in some timing tweaks, but without a computer and the ability to monitor exact timing, we thought it better to play it safe than sorry. (Look for future stories and solid gains inside *MM&FF*.)

After a brief cool-down, the coupe rolled into boost and shot to 6,000 rpm with anger. Peak boost climbed to 10.5 psi at 6000 rpm and the numbers rang in at 422 hp and 419 lb-ft for gains of 109 hp and 79 lb-ft over our NA 347 combo. A closer look at our loose tuning revealed another 20 hp easily left on the table, but for now safer is better and with over 375 lb-ft from 3,300 rpm to



We found out the importance of belt alignment with a blower the hard way since our car had the factory A/C deleted with a FRPP power-steering relocation kit. Thankfully Auto Specialties Performance (ASP) sells reproduction '93 Cobra water-pump pulleys that gave us the needed belt clearance between the waterpump and idler pulleys. Our car required an 82½-inch belt. The '93 Cobra pulley is much smaller than our March underdrive unit and even smaller than a stocker.



Maybe you forgot what a timing light looks like, but Chris Doig of BRG Racing took our tuning the old school route with timing, boost retard, and fuel pressure.



We hid the MSD 6 BTM box supplied with the Vortech kit under the dash for a clean install out of the elements.



Mickey Thompson ET Street Radials were tasked with putting all the power to the ground, and they certainly didn't disappoint. In fact, they bit hard enough to snap a stock axle. Doh!



The boost-timing module allows you to dial in the amount of timing retard based on boost. We settled in on 1 degree of retard per pound of boost with a base timing of 10 degrees.



Although it took two people to fit the Auto Medal Direct (AMD) aluminum, 2-inch cowl hood, it certainly didn't require that many people to lift it. The AMD hood is the only aluminum cowl hood that fits with the factory hardware, and it weighs a scant 17 pounds—that's over 25 pounds less than the stocker!





Portions of this smog sheet have been blurred for your safety...just kidding, but in all fairness, the car passed with flying colors.

redline, who can really complain? As for the gains over our original bolt-on baseline, we nearly doubled our horsepower for total gains of 196 hp and 148 lb-ft at the tires. Considering the numbers were achieved on a notoriously conservative Mustang dyno, there's more left in it with a proper tune and the car is still smog-legal, we'd say nearly doubling the power is a job well done.

## TRACK ATTACK

Just like the old saying, the bullcrap stops when the green flag drops. To confirm our dyno findings we paid a visit to Sacramento Raceway's quarter-mile. Now before balking at the less than ideal times realize that these numbers were achieved with a stock, high-mileage T5 on its last legs and stock four-lug axles. There was no launching to be had, just letting the clutch out and getting it to the wood. Heck, power shifting wasn't even an option. Again, instead of outright times we were after gains.

Our bolt-on baseline times weren't filled with much drama; simply get the clutch out, put it to the mat and shift at 5,500 rpm each gear. In an attempt to preserve the crunchy T5, we only made two hits, but the result was a best of 13.79 at 101 mph—not bad for a bolt-on coupe with 270K on the clock.

Next up was our boost-friendly motor without the blower. Under similar conditions to our baseline we were greeted to a much stronger pull, especially in the higher gears. The extra 87 hp and 70 lb-ft made itself known as our times fell to a best of 12.71 at 109 mph. The additional second we lopped off our e.t. was impressive, but the extra 8 mph we gained was even more impressive considering it was a mismatched motor without the boost.

After the blower was on, it was time to let 'er fly... and hopefully not break the transmission or axles. Just as before, the lack of quality drive-train parts killed all hopes of a solid launch. The throttle was again lifted for each, shift since power-shifting would have immediately killed the seasoned T5.

Once the tach swings past 3,000 rpm, you better be holding on tight, because the higher the tach moves the harder the car pulls. That's not to say you even need to spin it to 6,000 rpm though. Shift it at redline and you'll see 400-plus horsepower, shift it at 5,500 rpm and you'll see 400-plus lb-ft, it's that easy. Powering through the top-end, the added



Mustang Dynos are notoriously low, but we weren't after outright numbers. Rather, we were seeking the gains obtained throughout each stage of the build. The bolt-on stock motor put down 226 hp and 270 lb-ft. The low-compression 347 motor put down an impressive 313 hp and 340 lb-ft, for total gains of 87 hp and 69 lb-ft at the tires. Not bad for a boost motor running in NA form. Check out the torque curve—that's over 300 lb-ft from 3,300 rpm to redline.



After the blower install and a little tweaking, the coupe gained another 109 hp and 79 lb-ft at the tires with the Vortech V3 SI huffing 10.5 psi at redline for total numbers of 422 hp and 419 lb-ft at the wheels. Again, look at that torque—there's over 375 lb-ft available from 3,300 rpm to redline. The AFR was a fat 10.8:1 and the timing was on the soft side, but without the ability to chip tune the car we decided to play it safe rather than sorry. With a proper tune, there's another 20-30 hp easily left on the table.



boost made the car back-eighth with authority as it crossed the line with a best of 11.99 at 121 mph. We cut off almost a second and added another 12 mph over our stroker combo. With proper drivetrain components and a little practice, you're looking at a 10-second, smog-legal Fox-body.

## SOURCES

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877/892-8844  
www.airflowresearch.com

**ARP FASTENERS**  
800/826-3045  
www.arp-bolts.com

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936/588-3117  
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**COMP CAMS**  
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## PASSING SMOG

As much as we hated doing it, we rolled the coupe on the local smog rollers to put our money where our mouth was. The dyno operator was skeptical at first and made us prove that every part had a CARB EO number. But after 45 minutes of trying to flunk us he resumed the test and the car passed by an acceptable margin.

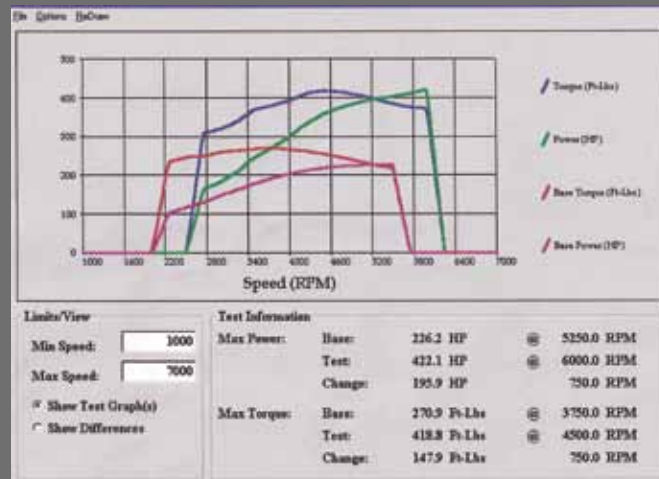
The massive 42-pound injectors made the idle rich, but it was still acceptable. The ironic thing was, had the car been tuned with a non CARB compliant chip it would have likely run cleaner since the parameters could have been further tweaked. But we'll leave that for another article and another day.

## MISSION COMPLETE

So there you have it, an 11-second, smog-legal street car that's the real deal. Sure we may have fudged a few things, and admittedly there's considerably more power and e.t. left in the car as it sits, but it hauls the mail and still passes smog as it sits. It wasn't easy playing by the rules, but we did, and we prevailed.

Now that we beat the system we're hungry for more, so look for our little boost coupe in the regular issues of *MM&FF* as we further tweak the package in hopes of making a 10-second smog legal coupe. Who knows? We might see 9s.

Hang tight—the smog-legal games have only just begun. **MP**



Here's the original baseline against the finished product. We nearly doubled our horsepower to the tune of 196 hp and 148 lb-ft at the wheels on crappy 91-octane California pump gas. The new combo has plenty left in it with more tuning, but it already runs 11s, passes smog, and drives well on the street. Mission complete!



Despite a stock T5, axles, smog equipment, and even the factory mechanical fan, the lightweight coupe easily skated to 11.99 at 121 mph at Sacramento Raceway. With more setup you're looking at a 10-second, smog-legal Fox-body.