

HOT

**TURBO
SPECIAL**



THE BIG BOSS

JPC's 76mm Single Turbo Kit Doubles the Amount of Badass in a BOSS 302

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All the parts that are to be used in the transformation— the JPC kit plus the extra goodies—prior to being installed. That there is quite an impressive selection of aftermarket goodness all in one spot.

When Ford released the BOSS 302 with 444 advertised, naturally-aspirated horsepower, everyone was elated. For the average enthusiast 444 horsepower is more than enough to satisfy their need for speed. However, there is a segment of our enthusiast population that is never satisfied with "stock" no matter how powerful the car comes off the showroom floor. Knowing this, Justin's Performance Center—JPC—designed an aftermarket single turbo kit for the 5.0L Coyote motor. As luck would have it, that kit also fits on the BOSS 302 variant. With the BOSS' increased factory output, it only makes sense that the kit would perform even better. And boy, did it ever. Before we reveal the results of the transformation, let's take a look at the kit that made it all happen.

A SYSTEMIC APPROACH

JPC engineered their turbo kit to be a straight-forward system, comprised of parts that not only work well together, but work well, period. With their extensive racing and performance experience, the crew at JPC have assembled a selection of parts – some of which they had to have manufactured to their specifications, since their ideal part didn't exist in a catalog – that are ideal for not only making big power, but doing it reliably, while maintaining street manners that one would expect from a nearly stock car – let alone one making double the horsepower it originally came with.

THE HEART OF THE SYSTEM

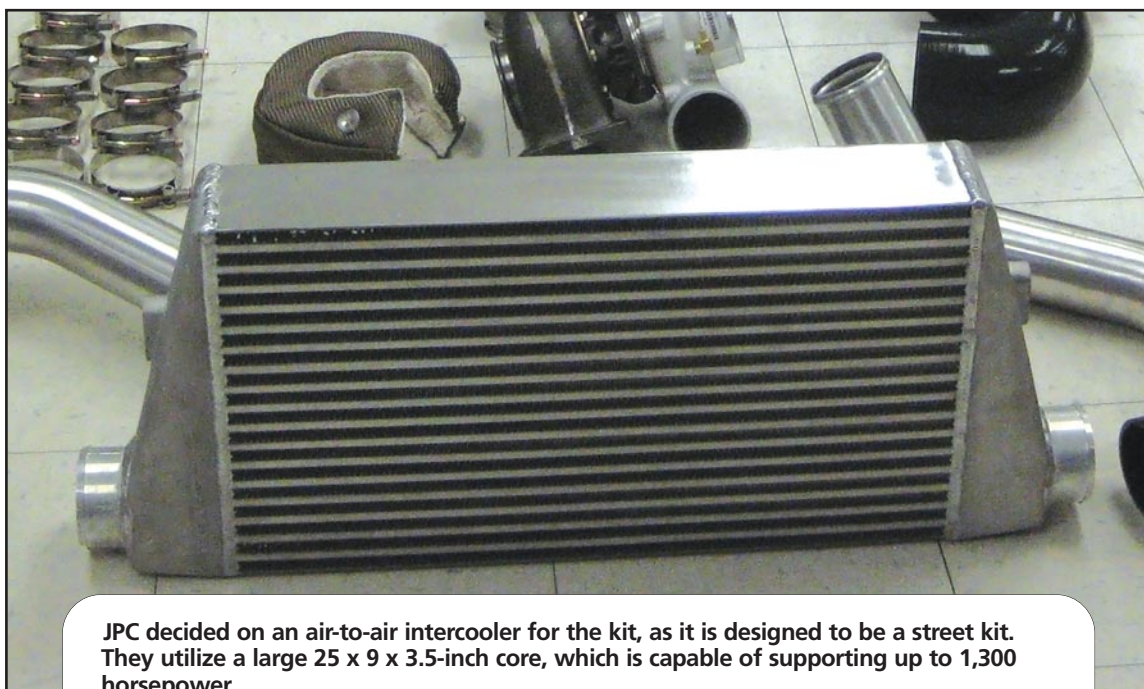
Both figuratively and literally, the heart of a turbo system is the turbocharger itself. Spec'ing out a turbocharger for a given application is a science all its own, and luckily the brains at JPC have it down pat. The turbocharger they chose for this application is the Precision Turbo PT7675 CEA. That particular snail can be found under their "Street and Race" category, meaning it's reliable enough to drive on the street every day, but incorporates Precision's race-bred technology into the unit. On the compressor side, it features a 76mm inducer compressor wheel, which features one of Precision's Competition Engineered Aerodynamics (CEA) designs, and is manufactured from a 2618 aluminum forging. The CEA compressor wheel allows for a higher efficiency in moving air (more horsepower) in addition to a faster transient response time (better



The kit utilizes a large 50mm blow-off valve from TiAL. With TiAL's unique design, up to 60-percent more air is released than similarly-sized units, allowing a single Q-series blow-off valve to support up to 1800 horsepower.

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On the compressor side, it features a 76mm inducer compressor wheel, which features one of Precision's Competition Engineered Aerodynamics (CEA) designs.



JPC decided on an air-to-air intercooler for the kit, as it is designed to be a street kit. They utilize a large 25 x 9 x 3.5-inch core, which is capable of supporting up to 1,300 horsepower.



For enhanced boost control, the JPC kit utilizes dual Precision PW46 46mm external wastegates. They are durable enough for street use, thanks to the use of extremely robust materials and quality component design.



Our subject - a 2012 BOSS 302 Mustang making 444 horsepower at the brochure, and one of the best looking ponies to come off the assembly line. After a couple days in the shop, the power output was doubled, putting over 875 horsepower to the rollers.



The JPC kit utilizes a Precision PT7675 CEA turbocharger. Rated at up to 1,200 horsepower, the unit features 4-inch inlet, 3-inch outlet, and a T4 Tangential .96 A/R turbine housing with a 3-5/8-inch V-band outlet.

One of the toughest parts of a turbo system to get right is the intake and exhaust piping.



The kit's midpipe is made of T304 stainless, incorporates the dual wastegates, and mates up to the stock exhaust manifolds like any other aftermarket exhaust.

Precision's Competition Engineered Aerodynamics compressor wheel designs are made from 2618 aluminum forgings which are then CNC machined to their final dimensions. They are lighter, stronger, and have more efficient blade designs than their cast counterparts.

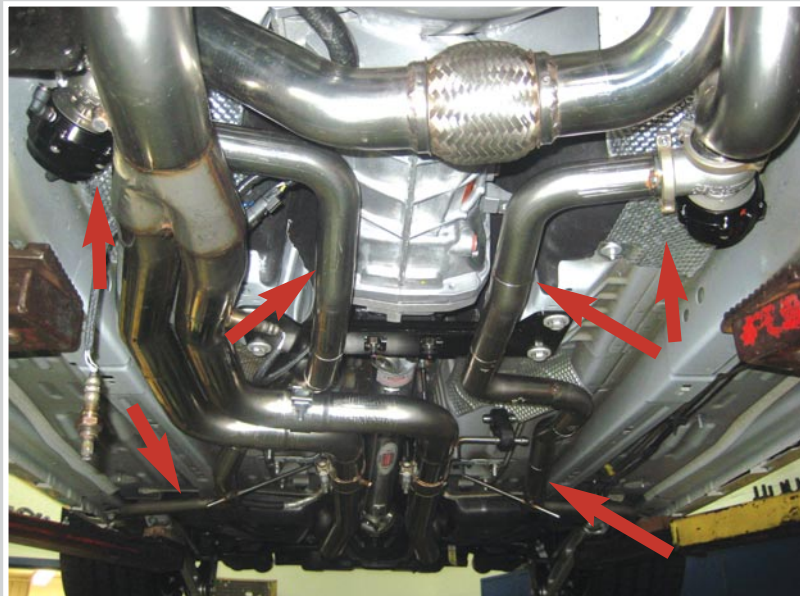
The turbocharger fits nicely right behind the driver's side headlight, thanks to the custom-spec'd electric fan included in the JPC kit.



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SOME CUSTOM TOUCHES

In this particular install, there were some custom touches added which really add to the badassness of this particular project. The BOSS 302's side-pipes were reutilized as wastegate dumps, while the standard kit is designed to have the dual wastegates dump to the atmosphere. This option is readily available if you are having the kit installed on your BOSS 302 by JPC. All you have to do is request it.



performance under varying conditions). JPC chose the "H" compressor cover option with a 4.00-inch inlet and 3.00-inch outlet to top of the cold side of the turbocharger. On the hot side of the turbo, the unit features a 75mm 84-trim turbine wheel, which also features a CEA design which helps decrease spooling time, and reduce lag. They went with the T4 exhaust housing option with a .96 A/R and a 3-5/8-inch V-band connection. All told, the turbocharger is quite an impressive unit.

PLUMBING THE PUMPER

One of the toughest parts of a turbo system to get right is the intake and exhaust piping. There are a number of ways to skin a cat, as the saying goes, and JPC's method is not only mechanically efficient, it is also aesthetically clean. For the intake, a silicone elbow and oversized filter element adorn the compressor inlet, while the cold-side charge piping consists of mandrel-bent three-inch aluminum piping with all the required clamps and brackets supplied. The charge feeds through a huge 25-inch-wide, 9-inch-tall and 35-inch-thick air-to-air intercooler (rated as able to handle 1,300 horsepower), that JPC has managed to neatly tuck behind the front fascia.

On the hot side is where the ingenuity really shows through, however. Starting with T-304 Stainless – chosen by JPC over the more common and less-expensive T-409 for its superior corrosion resistance, strength, and all-around toughness – the kit attaches to the factory manifolds and feeds the exhaust gasses to the turbine inlet. The turbine outlet then dumps the reutilized gasses



Talk about high and tight—the fit and finish of the kit's hot-side and exhaust piping is excellent, thanks largely to the extremely well-designed layout.

into a series of pipes which mate up to the stock over-axle exhaust. Incorporated in between the turbine outlet and the mating pipes is also an electronic exhaust cutout, so that at the track (or at the stoplight) you can free up your exhaust and provide the turbo with a little bit easier breathing.

HANDLING THE PRESSURE

Going back to "Turbo System 101" we know that a properly designed performance turbo system needs a blow-off valve and a wastegate to control the boost pressures. However, in their kit, JPC includes a manual boost controller so that you aren't having to constantly swap springs in your wastegate and opted to utilize dual wastegates for improved boost control. The dual Precision PW46 external wastegates are made from high-temp stainless steel and billet aluminum components, and utilize a nickel-chromium alloy internal valve. The blow-off is a gigantic 50mm TiAL Q-series unit capable of supporting up to 1,800 horsepower. The TiAL unit is a V-band mount design and is CNC-machined from 6061 aluminum.



GO JUICE UPGRADES

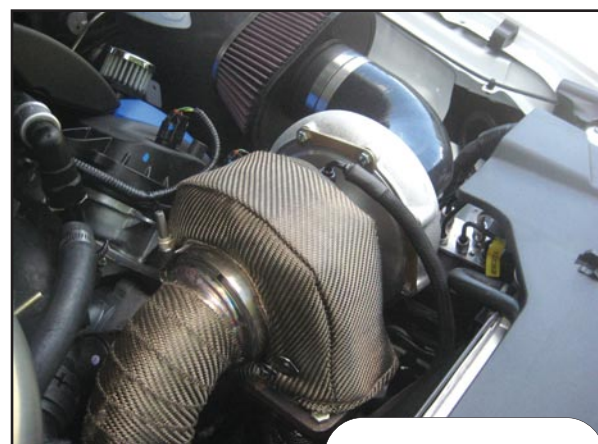
One thing to note, is that depending on how hard you want to crank on the kit, you'll need to upgrade your fuel delivery ability. For a mild street kit, a simple Boost-A-Pump might suffice, while if you are going for big numbers, an entirely new fuel system will be required. For this particular application, the car's owner decided to go with E-85 and a multi-pump fuel hat system with billet rails and 1015cc/min (~96.5 lb/hr) injectors. The combination has worked well so far, as technically, the car still runs on pump gas.

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The large air-to-air intercooler tucks up behind the bumper snug as a bug. The angle of this photo is deceptive, it actually gets quite a bit of airflow where it sits.

The blow-off is a gigantic
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Lava Wrap is used on key hot-side pipes, along with a Lava turbine cover, to try and keep the underhood temperatures in check.



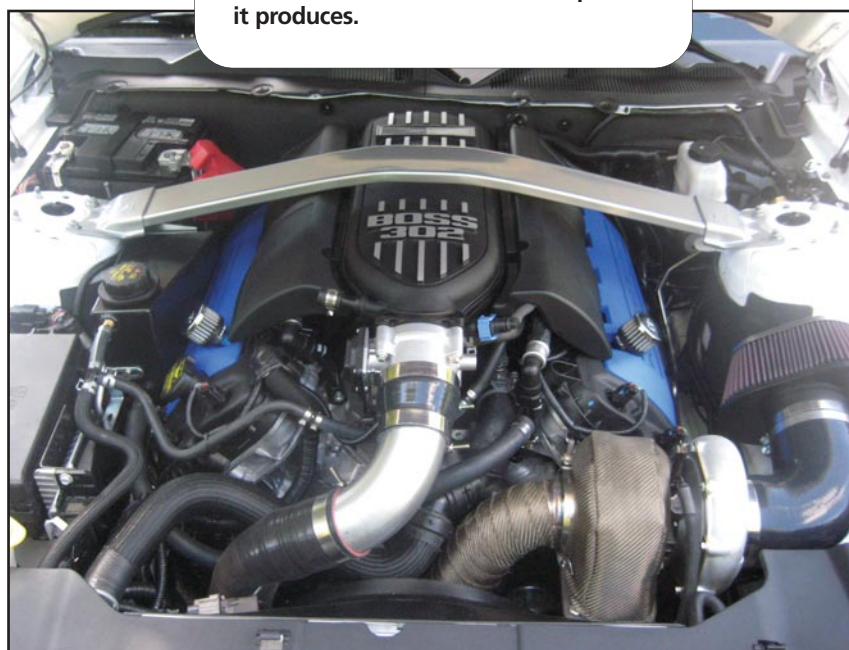
With the bumper cover and lower grille back in place, along with a coat of low-viz, thermally-conductive black paint, there are very few external cues to give away the beast under the hood.

On the rollers, the car managed to put down 875.6 horsepower, which more than doubled the stock output of the BOSS 302.



By swapping in a Tremec T-56 Magnum, the owner has maintained the six-speed manual feel, original to the BOSS 302, but has significantly increased the driveline's ability to survive under hard driving.

Completely installed, the kit looks neat, clean, and unobtrusive. It could almost pass for a factory option, and belies the ridiculous amount of power it produces.



With just a wheel and tire swap, the BOSS 302 was on the verge of the nine-second zone. Not bad at all for a car that looks almost stock and drives like it looks.



OTHER UPGRADES TO THE BOSS

To handle a doubling of power, the BOSS' owner decided to make some driveline upgrades while he had everything apart. First was the installation of a Tremec T-56 Magnum transmission. He wanted to maintain a six-speed transmission like the OEM Getrag MT-82, but



with radically increased torque capacity and durability under stress. A McLeod RST twin-disc clutch and a McLeod lightened steel flywheel were added to increase torque capacity while being drivable on the street. He also opted to ditch the heavy OEM two-piece driveshaft for a lighter, stronger one-piece aluminum Dynotech unit.

THE FINAL TOUCHES

Also in JPC's kit are a few more items that really make the kit a truly complete package. The first of which is a custom-spec'd electric fan that is thin enough to provide the needed room, while maintaining solid performance. The kit also comes with stainless oil feed and return lines for the turbocharger, which are assembled with Fragola hardware. Again, for added clearance and proper mounting of everything, the kit also includes a tubular radiator support. The critical hot side piping is all wrapped in high-temp Lava Wrap to keep the engine bay temps in check. A pair of K&N Valve cover breathers are included, along with 1/4-inch push fittings and vacuum tubing for reliability as well as aesthetics.

TESTING THE BOSS

This particular BOSS 302 had a few other modifications to it—like an upgraded fuel system with E85, a T-56 Magnum and associated improved driveline parts (see the sidebar for full details). On the rollers, the car managed to put down 875.6 horsepower, which more than doubled the stock output of the BOSS 302. At the drag strip, with nothing more than a set of skinnies and slicks thrown on the car, the BOSS carded a best elapsed time of 10.055 at 145.36 miles per hour. Not bad at all for a car that drives almost like it did when it came off the showroom floor, and can still eat up the corners like it was designed to do.

SOURCES

JPC
JPCracing.com
866 | JPC | RACE

McLeod
McLeodRacing.com
714 | 630 | 2764

Precision Turbo
PrecisionTurbo.com
219 | 996 | 7832

TIAL
TialSport.com

TREMEC
Tremec.com
800 | 401 | 9866