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Bam! 28 More HP To The Tires On A 5.7L Hemi With TTi Pipes!

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Back in the 1960s and early 1970s, a performance enthusiast could walk into a Dodge or Plymouth dealership, plunk down a minimal down payment, and drive away with a strong running Mopar. Often within weeks of the purchase, possibly before the first payment, the exhaust manifolds were removed and a pair of headers were slithered into place. The rest of the factory exhaust was often cobbled together to fit to the new headers. If enough expendable income was available, the factory exhaust was removed and a "custom" exhaust was fitted by a muffler shop. The new exhaust most likely picked up some horsepower, but the header paint quickly burned off leaving rusty, unattractive pipes. Additionally, the headers often hung low enough to scrape on uneven road surfaces. The thin-gauge header flanges eventually warped and leaked, and the headers constantly burned plug wires and any wiring near the pipes. By the 1980s, the aftermarket exhaust technology was taking off, and the older Mopars now had a source for quality exhaust parts with options for various coatings, which reduced many of the previous difficulties with headers. In 1988, Tube Technologies, Inc. (TTi) started

producing quality headers and complete exhaust systems for A-, B-, and E-Bodies. Having worked with TTI's products on the older rides (the author has had a 3-inch system on a Dart since 2001), we had an interest in seeing how their products would work on a newer Gen III Hemi. We contacted TTI for a complete US-built stainless steel system (part No. PK-57XP-MA) which included headers, catalytic converters, mid-section pipes, mufflers, tailpipes, polished 304 stainless steel exhaust tips, and all the mounting hardware necessary for a 5.7L Hemi in a 2006 Dodge Charger.

Before the stock factory exhaust was removed, the Charger was tested on Pennsylvania College of Technology's (Penn College) Mustang chassis dyno. The Charger was all stock with the exception of Performance Distributors' SOS coils, AMSOIL synthetic oils throughout the drivetrain, and a 93-octane performance tune. With the Charger strapped to the dyno for series of runs, the Hemi provided a peak torque of 346 lb-ft at 4,400 rpm, and peak horsepower of 309 hp at 5,200 rpm. Once the dyno numbers were recorded, the Charger was moved to a lift to begin the removal of the factory exhaust.

Prior to getting started, it must be mentioned that the removal of a complete exhaust system from a late-model Hemi vehicle is extremely challenging. It requires the use of a car lift and a significant collection of sockets, ratchets, swivels, extensions, and wrenches (ratcheting and combination). A screw jack turned out to be very helpful in adjusting the engine height in the engine bay and supporting the engine when the motor mounts were removed. Lastly, a large amount of patience will be necessary to complete the task successfully—something that is pretty much the rule across all late-model performance platforms, Chrysler and otherwise.

The disassembly of the factory exhaust was straightforward. The driver rear muffler was removed from the mid-pipe muffler (suitcase muffler) followed by the one-piece mid-pipe and passenger side muffler. Four O2 sensors (two per bank) had to be unthreaded from the catalytic converter downpipe before the cats could be pulled from the exhaust manifolds. Care was taken to release the O2 sensor wire connectors from the vehicle's engine harness, and each connector on the engine harness was marked to identify where the O2 sensors had been attached, thus easing the reinstallation process. At this point, the cats were pulled and the exhaust manifolds were removed from their respective cylinder heads. (There were eight manifold bolts on the driver side and nine manifold bolts on the passenger side.) The rusty 11-year-old exhaust fought every step of the way from being pulled from the Charger. Eleven of the fasteners were broken during the removal, but luckily, the exhaust manifold bolts unthreaded from the heads without any difficulty.

Before the installation of the headers, the supplied O2 sensor extension harnesses were installed and placed out of the way for the header installation. These harness extensions were necessary due to the revised location of the cats further down the exhaust. The headers were guided into place and the new header bolts were installed. It was necessary to remove both motor mounts to gain access to several of the lower header bolts. On the driver side header, the removal of the overflow jug and the air box allowed access to three of the top header bolts. On the passenger side header, one factory manifold bolt was reused along with a TTI-supplied spacer. This bolt and spacer locates the dipstick tube around the header on a 5.7L. With the headers torqued into place, the catalytic converters were installed. The O2 sensors were threaded into their respective bungs, and the sensors were connected to the wire harness extensions. The rest of the exhaust was systematically installed and adjusted to ensure a leak-free, interference-free installation. The polished tips were riveted (and clamped) into place after all the final adjustments were completed. The installation of the headers and exhaust took a full weekend of dedicated work to complete.

With all the hours involved in the installation of the exhaust, would the benefits of the labor show up on the dyno? During the drive to the dyno facility, there was an opportunity to listen to the exhaust. It was very mild and mellow, not much louder than stock. The TTI exhaust had no noticeable leaks, rattles, or drones (even in the Multi-Displacement Mode of the 5.7L) as the Charger cruised the interstate and back roads of central PA. Once at Penn College, the Charger was strapped onto the dyno, and the Hemi was put through another series of dyno runs, which resulted in very positive outcomes. With the same parameters as the baseline (Performance

Distributors, SOS coils, AMSOIL synthetic oils, and a 93-octane performance tune), the torque was up 24 lb-ft with a peak torque of 370 lb-ft at 4,400 rpm, and the horsepower rose 28 hp to a peak of 337 hp at 5,100 rpm. At WOT, the headers had a deep raspy roar that echoed throughout the dyno cell.

If the time is taken to install a TTi exhaust on a Gen III Hemi, the reward will be an exhaust that provides an increase in performance while offsetting all the disadvantages associated with exhaust installations of the past. TTi developed a custom fit exhaust that is tight to the chassis to maintain ground clearance, constructed an entire system of stainless steel to reduce corrosion, offered headers with thick, flat flanges to reduce leaks, and designed headers that clear all the wiring, brake lines, etc. Best of all, this exhaust will provide a melodious exhaust tone when motoring around town, yet deliver a serious growl when the Hemi is at full song. That alone should be enough reason to slip a TTi exhaust under your ride!

Interested in late-model LX-platform Hemi mods? Check out these other stories on our 2006 Dodge Charger Hemi Pursuit Package:

[Ignition Coil Pack Bolt On & Dyno Test](#)

[Synthetic Lubricant Test \(Before & After On The Dyno\)](#)



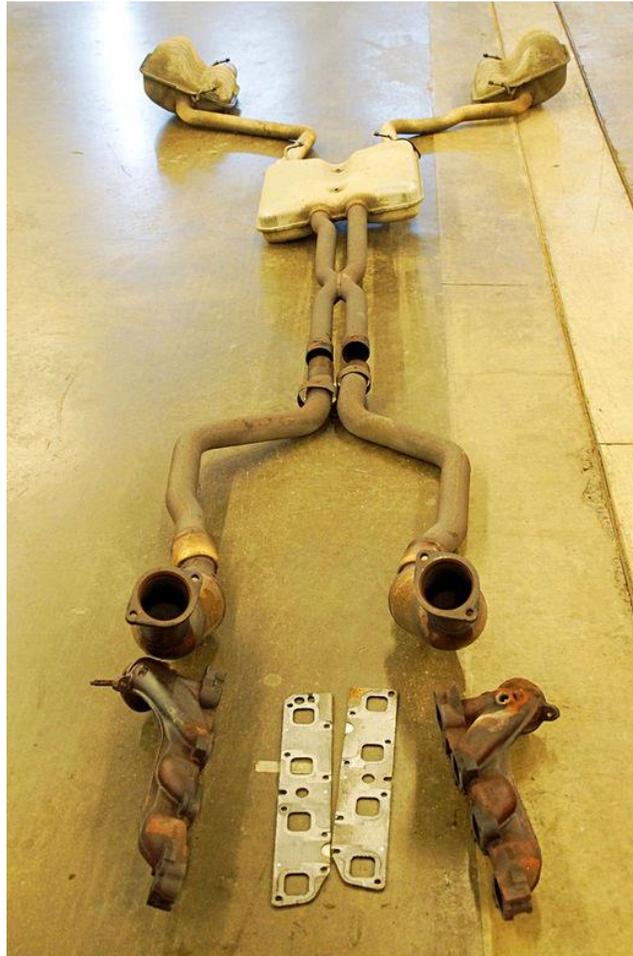
TTi exhaust part no. PK-57XP-MA for the 2005-2015 Chrysler 300, Charger, and Magnum 5.7L Hemis includes a pair of 1 7/8-inch unequal length primary tube headers, two MagnaFlow catalytic converters, a 3-inch x-pipe mid-section, two MagnaFlow mufflers, and a pair of tailpipes with polished 304 stainless tips. Also included is all the necessary mounting hardware, gaskets, O2 sensor extensions, and a dipstick spacer.



The factory exhaust performed its tasks in decent fashion for the last eleven years. The exhaust consisted of manifolds (not seen), a pair of catalytic converters, an x-pipe converging into a center muffler, and tailpipes that ended in a muffler behind each rear wheel.



The driver-side tailpipe and muffler assembly was detached from the center muffler. This allowed the tailpipe and muffler to be freed without removing the bumper cover. With the driver-side tailpipe removed, the band clamps were loosened to release the center muffler, mid-pipe, and passenger tailpipe as an assembly.



The factory exhaust proved to be functional, but the restrictive exhaust manifolds and multiple mufflers reduced the performance potential of the Hemi. If the exhaust is anything but new, expect to work with plenty of rusted fasteners. Anticipate using plenty of penetrant spray, the use of an array of sockets, ratchets, swivels, extensions, and wrenches to free the exhaust, and, lastly, have plenty of patience while working on this task.



TTi provided all the necessary hardware for the installation of the new exhaust system. Included in the kit are four O2 sensor wiring extensions, 17 header bolts (only 16 bolts may be necessary if one of the factory bolts has to be reused with the provided spacer to locate the dipstick), and six bolts, washers, and nuts for the header collectors.



Before the headers were slipped into place, the O2 sensor extension wires were plugged into position. It was easier to install the extensions at this point rather than fight around the headers after the header installation. The extensions were connected and then moved aside to allow the installation of the headers and cats.



With this Charger, the O2 extension wire connectors had to be modified to fit the factory wiring harness connectors. Arrow "1" shows where a guide rail had to be ground off permitting the male connector to fit into the O2 sensor connector. Arrow "2" illustrates the modification to the female connector housing. An offset guide rail was ground into the connector housing to allow the connector to fit into the factory wiring harness. Three of the four connectors required some type of modification.

TTi has connectors for most applications, but in this case, some minor modifications were required.



The headers slipped into place with little difficulty. TTI recommends using a thin-layer of high-temp sealer on both sides of the exhaust gasket to ensure a leak-free installation, and the sealer helped to hold the gasket in place during the installation. While many of the header bolts could be accessed from the bottom of the Charger without removing additional components, both motor mounts had to eventually be removed to gain access to some lower and upper header bolts.



The 5.7L required the use of a factory bolt with the addition of a TTI-provided spacer to locate the dipstick in the proper location. The best factory bolt (not rusted or broken) was selected for this task. The bolt, spacer, and stud did the job, and the dipstick was located in nearly the factory location. The dipstick installation was much easier from under the car rather than attempting to slide the dipstick in to place from the top of the engine bay.



The TTi exhaust fits like a glove. All the factory heat shields were left in their factory location, and the pipes snaked under the chassis in the factory locations without any interference. There was no need for any hammer modsö to make the exhaust fit into place.



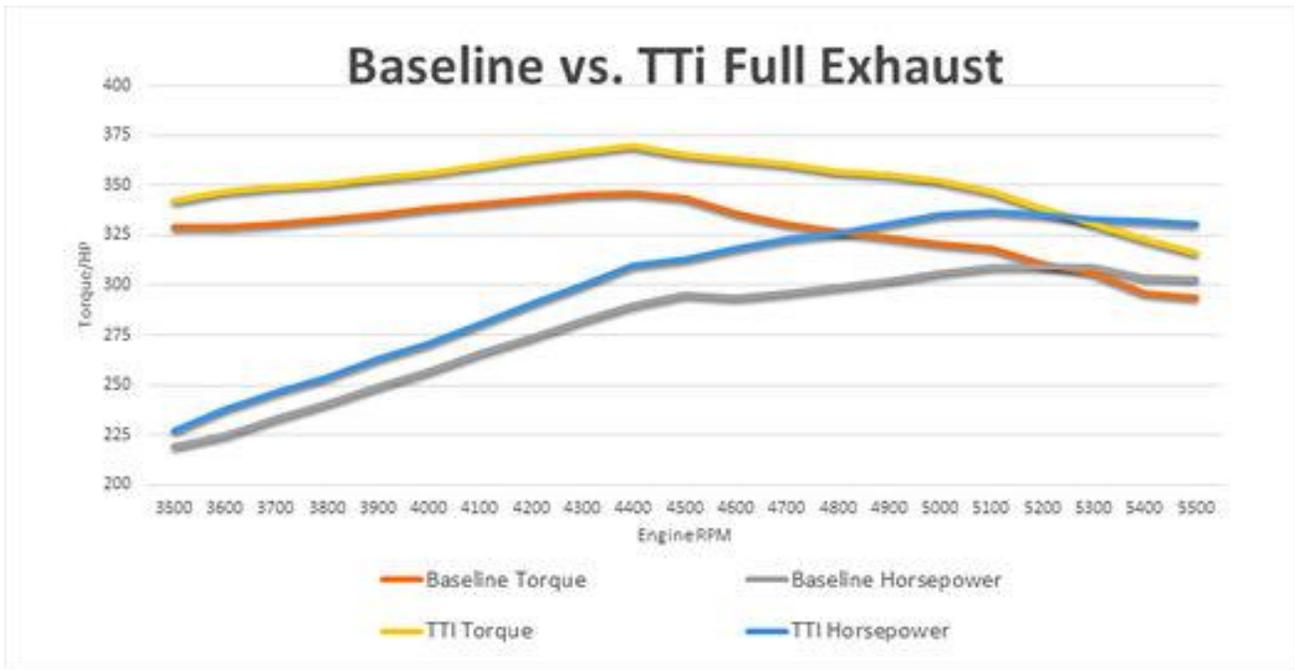
The TTi exhaust used all the factory rubber grommets and factory hangers for the proper fitment. The TTi exhaust flowed from the pair of mufflers to the polished tips that added just a little flash to the exhaust. The tips were fine-tuned for proper fit after the rest of the exhaust had been adjusted. The tips required a small hole to be drilled into the tailpipe and a rivet to be placed into the hole. A band clamp wrapped around the tip, and the rivet held everything in place.



The 3-inch exhaust is very close to making contact with one crossmember located just in front of the mufflers. If necessary, a few washer shims can space the crossmember down a little to increase the clearance of the pipes.



Pennsylvania College of Technology provided their dyno facility for all the testing of the Charger. The Charger with Performance Distributors \emptyset SOS coils, AMSOIL products throughout the drivetrain, and a 93-octane tune laid down a baseline of 346 lb-ft of torque at 4,400 rpm. Baseline horsepower was 309 hp at 5,200 rpm.



This graph illustrates the baseline torque (orange) and baseline horsepower (gray). The TTI exhaust torque (yellow) jumped up 24 lb-ft to 370 lb-ft at 4,400 rpm, and the TTI exhaust horsepower (blue) was up 28 hp to 337 hp at 5,100 rpm. Undoubtedly, this performance increase can be felt in the seat of the pants and heard by all near the Charger.

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