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New Supercharged 6.2-liter HEMI® with 707 Horsepower Is Most Powerful V-8 Ever Produced by Chrysler Group

New 2015 Dodge Challenger SRT with the Hellcat Engine has Additional Performance Boost From Breakthrough Heavy-Duty TorqueFlite Eight-speed Automatic Transmission and Upgraded Driveline

- Supercharged 6.2-liter HEMI® Hellcat V-8 will deliver 707 horsepower – the highest output of any V-8 engine ever produced by Chrysler Group and the most powerful muscle car ever
- Fearless design; component content 91 percent new compared with 392 HEMI V-8
- Engineered in-house by SRT for awe-inspiring performance, a key SRT hallmark
- Raises bar for SRT validation; supercharged 6.2-liter HEMI development inspired demanding new test protocols
- New 2015 Dodge Challenger SRT first in segment to feature eight-speed automatic transmissions, including brawny new TorqueFlite designed to handle prodigious torque of supercharged 6.2-liter HEMI
- Upgraded six-speed manual transmission features external oil cooler and beefier clutch
- Higher output for 392 HEMI: 485 horsepower and 475 lb.-ft. of peak torque
- New axles deliver greater efficiency, capacity to withstand higher torque
- Largest front-brake package ever offered by Chrysler Group – 15.4-inch Brembo two-piece rotors, gripped by six-piston Brembo calipers

July 21, 2014, Auburn Hills, Mich. - Chrysler Group's SRT powertrain engineers were tasked with providing more of a good thing in the new 2015 Dodge Challenger SRT with the HEMI® Hellcat engine. They responded by delivering the most. Ever.

For 2015, the iconic muscle coupe is propelled by the new supercharged 6.2-liter HEMI V-8 with an output of 707 horsepower – greater than any V-8 engine in Chrysler Group's celebrated history and making it the most powerful muscle car ever. The available V-8 can be mated with an upgraded six-speed manual transmission or a beefy, new TorqueFlite eight-speed automatic – the first such gearbox ever offered in the Challenger SRT's time-honored segment.

"If ever there was an engine that does Detroit proud, this is it," said Bob Lee, Vice President and Head of Engine, Powertrain and Electrified Propulsion Systems Engineering — Chrysler Group LLC. "The supercharged 6.2-liter HEMI V-8 is beyond robust. With 91 percent new content compared with the standard 392 HEMI, it will shatter the expectations of SRT customers – and they are among the most demanding and knowledgeable powertrain buffs anywhere."

Material Success

Only the strongest, most durable materials can contain the power generated by the new supercharged 6.2-liter HEMI V-8. Its cast-iron block features unique water jackets to deliver optimal cooling. And of course, it's HEMI Orange with a tough, powder-coated finish.

The breakthrough SRT engine features a forged-steel crankshaft with induction-hardened bearing surfaces. The result is a crank so well-engineered it can withstand firing pressures of 1,595 psi (110 bar) – the equivalent of five family sedans standing on each piston, every two revolutions. And its unique, specially tuned crank damper has been tested to 13,000 rpm.

High-strength, forged-alloy pistons, developed using advanced telemetry measurement, are coupled to powder-forged connecting rods with high load-capacity bushings and diamond-like carbon-coated piston pins.

The new supercharged 6.2-liter HEMI V-8 has premium-grade, heat-treated aluminum-alloy cylinder heads, which are optimized for superior thermal conductivity. Die-cast aluminum rocker covers echo the block's Street HEMI Orange motif.

Sodium-cooled exhaust valves feature hollow-stem construction and special, steel-alloy heads that stand up to temperatures as high as 1,472 Fahrenheit (800 Celsius). Cam profiles afford 14.25-mm inlet and 14.0 mm of exhaust lift.

Special Delivery

The new engine marks the return of supercharger technology to the SRT fold, delivering the full brand experience with fresh potency.

The 2,380cc/rev blower features integral charge coolers and an integrated electronic bypass valve to regulate boost pressure to a maximum of 80 kPa (11.6 psi). Its twin-screw rotors are specially coated with:

- a proprietary formula of polyimide and other resins
- nanometer-sized, wear-resistant particles
- solid lubricants, such as PTFE (Teflon)

The coating accommodates tighter tolerances between the rotors. This reduces internal air leakage and helps deliver improved compressor performance and higher efficiencies. The coating not only can withstand the temperatures generated by compression, it provides a superior corrosion resistance.

The new supercharged V-8, sealed for life with premium synthetic oil, boasts a drive ratio of 2.36:1 and a maximum speed of 14,600 rpm. The drive system's one-way clutch de-coupler improves refinement, while allowing for precisely the kind of auditory feedback SRT customers find alluring.

The supercharger gulps air through an Air Catcher inlet port, which replaces the driver's-side inboard marker light and connects to a patented twin-inlet, eight-liter air box. The blower further benefits from a 92-mm throttle body – the largest ever used in a Chrysler Group vehicle.

The fuel system keeps pace with an in-tank pump that accommodates variable pressures, half-inch fuel lines and eight injectors each capable of delivering a flow rate of 600cc/min – enough to drain the fuel tank in approximately 13 minutes at full power.

Such performance promises an under-hood environment that is torturous, to say the least. So SRT responded with some clever engineering.

The large-nosed crank drives a high-flow gerotor oil pump that feeds a lubrication circuit servicing eight high-flow piston cooling jets. A high-capacity oil/air heat exchanger, mounted in the front of the car, mitigates oil temperatures when driving conditions are harshest, such as on track days.

The 2015 Dodge Challenger SRT models use 0W-40 synthetic oil, developed specifically for SRT vehicles by Pennzoil.

Additional cooling measures include a low-temperature circuit with two air/coolant heat exchangers integrated into the supercharger housing. This setup is designed to keep air temperatures below 140 degrees Fahrenheit (60 degrees Celsius), under extreme ambient conditions, while enabling air flow of up to 30,000 liters per minute.

So effective is this feature that engine power will not be de-rated due to cooling demands after 20 minutes of hard driving on a road course at an ambient temperature of 100 degrees Fahrenheit (37 degrees Celsius).

More Maximums

The 2015 Dodge Challenger SRT with the Hellcat engine also redefines the brand's exhaust note, which is custom-engineered using an electronically controlled exhaust valve to accentuate the distinctive sound.

In fact, the first time a 2015 Dodge Challenger SRT with the HEMI Hellcat was fired up on the assembly line at Chrysler Group's plant in Brampton, ON, workers came running to investigate.

The 2.75-inch, straight-through, twin-exhaust system includes durable, double-walled exhaust manifolds and ceramic catalysts capable of withstanding temperatures up to 1,922 degrees Fahrenheit (1,050 degrees Celsius).

The 2015 Dodge Challenger SRT Hellcat also transformed the brand's vehicle-development process. New tests were required to validate the high-performance engine's durability. This required construction of new laboratories with dynamometers that can measure such prodigious levels of performance. The development teams conducted almost 2 million customer-equivalent hours of dynamometer testing on the supercharged 6.2-liter HEMI V-8 to ensure the long-term quality and performance.

Road tests included numerous high-speed runs in severe climate conditions and a strenuous 24-hour track testing program at the challenging Nelson Ledges in Ohio. Within the racing community, Nelson Ledges is infamous for its harsh surfaces. The 24-hour endurance testing confirms that the durability of the suspension, engine and brake systems will exceed SRT owners' expectations for the road or track. In addition, the off-the-charts performance targets set for the supercharged 6.2-liter HEMI V-8 demanded still greater punishment. So engineers subjected the car to 100 consecutive drag starts.

Even after such abuse, SRT engineers are not content. So every engine gets a 42-minute dynamometer shakedown before it is shipped for assembly in the vehicle.

Gear Glory

Traditionalists can still beat the Challenger SRT 392 and the Hellcat engine with a stick. The supercharged 6.2-liter HEMI V-8 can be paired with a modified, Viper-sourced six-speed manual transmission that boasts an internal cooling pump and external, vehicle-mounted oil cooler. The 258-mm heavy-duty clutch affords easy access to the new engine's extraordinary power.

For 2015, Chrysler Group also adds a new member to its TorqueFlite family of eight-speed automatic transmissions. Like its predecessors, it is unparalleled in efficiency and unrivaled for its smoothness. But to withstand the supercharged 6.2-liter HEMI V-8's ground-breaking output, this transmission's maximum engine-torque capacity is 30 percent greater than any eight-speed previously offered by Chrysler Group. With the new transmission, the company added an extra layer of quality testing to make sure shift responsiveness would match SRT customers' expectations in a wide range of driving scenarios.

This is accomplished by adding pinion gears, one each in the 1st and 3rd gear sets, and five more clutch-pack disks – two in clutch E and one each in clutches A, C and D.

The defining benefit of the 2015 Dodge Challenger SRT with the Hellcat engine's available eight-speed transmission is its 7.03 ratio spread. Gear ratios are:

1st – 4.71
2nd – 3.14
3rd – 2.10
4th – 1.67
5th – 1.29
6th – 1.00

7th – 0.84
8th – 0.67
Reverse – 3.30

The final-drive ratio for the TorqueFlite, as paired with the supercharged 6.2-liter HEMI V-8, is 2.62. The transmission's overall top gear is 1.76.

A new M-gate shifter and steering-wheel-mounted paddles better connect driver and transmission – key considerations when tapping the nearly 200 possible drive-mode combinations that stem from five distinct settings:

- Default
- Sport
- Track
- Valet
- Custom

SRT's Launch Control is standard. The feature's performance is enhanced by new, stiffer, asymmetric half-shafts that minimize "power hop" under hard acceleration, and a new driveshaft that boasts high-strength CV joints and geometry optimized for spirited driving.

The new driveshaft and half-shafts also benefit from premium lubricants designed for high-speed operation.

Like the beefy new TorqueFlite eight-speed automatic, a new-for-2015 rear axle also accommodates higher torque output. The Challenger SRT Hellcat's 230-mm axle also provides for efficiency improvement, compared with the one it replaces. Design features that contribute to the axle's efficiency gains include:

- Lightweight aluminum housing
- Cooling fins
- High-efficiency head, tail and differential bearings
- Low-viscosity fluid

Echoing the 2015 Dodge Challenger SRT Hellcat's theme of durability, its new axle benefits from:

- Welded ring gears
- Advanced, shot-peened gear material
- Hardened shims for added strength at key interfaces
- Robust four-pinion differential
- A four-point mounting system for improved stability

An asymmetric limited-slip differential allows for unique bias-ratio tuning for on- and off-throttle behavior. This serves to enhance grip, stability and steering response, enabling smooth power delivery for hard acceleration on corner exits. When trail-braking, the differential further tightens to stabilize the car and prevent oversteer.

Fundamental Improvements

The new 2015 Dodge Challenger SRT benefits from upgrades to the standard-equipment 392 HEMI V-8. Horsepower climbs to 485 from 470, while peak torque jumps to 475 lb.-ft. from 470 lb.-ft.

The 392 also can be mated with a TorqueFlite eight-speed automatic transmission. Ratio spreads and gear ratios are the same for both versions, but the 392's gearbox has a final-drive ratio of 3.09 and an overall top gear of 2.07.

Like the Dodge Challenger SRT with the Hellcat engine, the Challenger SRT 392 gets a new lightweight axle. It measures 220 mm.

Tires and Chassis

Helping to fill the wheel wells on the Dodge Challenger SRT 392 model are new, standard, SRT-exclusive "Slingshot" split-seven spoke 20 x 9.5-inch, lightweight forged-aluminum wheels with a Hyper Black finish. The Challenger SRT with the HEMI Hellcat engine rides on the same "Slingshot" wheels with a standard Matte Black

finish or the optional "Brass Monkey"/dark bronze finish.

Two new 275/40ZR20 Pirelli P Zero tires provide performance for all seasons. Both Pirelli P Zero Nero and P Zero tires are Y-Plus rated to handle extreme speeds of the Challenger SRT Hellcat.

Standard on both Challenger SRT models is the largest front-brake package ever offered in a Chrysler Group passenger vehicle, featuring all-new 15.4-inch Brembo two-piece rotors, the largest two-piece rotor Brembo manufactures in North America, with six-piston calipers for outstanding heat management/thermal capacity and longevity.

New anti-lock braking system (ABS), electronic stability control (ESC) and traction control systems are uniquely tuned per powertrain and configurable SRT Drive Modes.

About Dodge

The Dodge brand is tearing into its centennial year as America's mainstream performance brand, celebrating its 100th anniversary on July 1, 2014. With the purification of the brand and consolidation with SRT, Dodge is getting back to its performance roots with every single model it offers. The consolidated Dodge and SRT brands will offer a complete lineup of performance vehicles that stand out within their own segments. Dodge will be the "mainstream performance" brand within the Chrysler showroom. SRT will be positioned as the "ultimate performance" halo of the Dodge brand, together creating a complete and balanced performance brand with one vision and one voice.

From muscle cars to compact cars, minivans, crossovers and full-size SUVs, the Dodge brand's full lineup of 2015 models deliver best-in-class horsepower, class-exclusive technology, unmatched capability and a slew of cool features, such as LED headlamps, Dodge signature racetrack tail lamps, dual exhaust, 8.4-inch touchscreen infotainment centers and 7-inch thin-film transistor (TFT) customizable gauge clusters, to name a few. For the 2015 model year, customers will be able to drive the new 2015 Dodge Charger and Challenger, as well as the Dodge Challenger SRT with the HEMI Hellcat. The Dodge brand lineup also includes the 2015 Dodge Dart, Durango, Grand Caravan and Journey, including the new Crossroad model, and Dodge Viper SRT.

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