

# The 2016 Ford Mustang Shelby GT350R



## History

The Ford Mustang was introduced in 1964 as a four seat sports car. Since then, over nine million Mustangs have been sold, making it one of the most popular cars ever produced. In the late 1960's, the Mustang started the pony car class that describes affordable, compact, sporty cars with high performance capabilities. Pony cars started the legendary rivalry between the Ford Mustang, Chevrolet Camaro, and Dodge Challenger. All three cars have recently been revived by their automakers and have rejuvenated the muscle car and horsepower wars between the three large American automakers. The 2016 GT350R was designed to outperform the Chevy Camaro Z/28 while keeping true to the legacy left behind by the original 1965 Shelby GT350. That car was designed by Carroll Shelby and was essentially a road legal version of the NASCAR Mustang stock car. It featured an upgraded 289 V8 engine with 306 hp, performance brakes, a stock car suspension, and racing tires to put the extra power to the ground. Today, the Shelby GT350R includes similar upgrades and represents Ford's highest performance entry in the segment, meant to outperform Dodge and Chevy to once again claim pony car dominance.

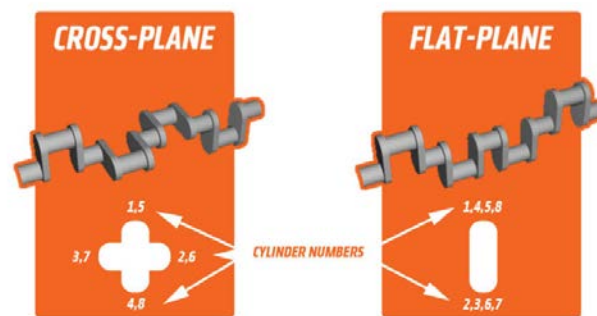


A 2016 Shelby GT350R alongside an original 1965 Shelby GT350.

## Innovations/Performance

The GT350R is a high performance, track focused, muscle/pony car. It was developed as a response to Motor Trend's 2015 Driver Car of the Year, the 2015 Chevy Z/28 Camaro. The Z/28 gained much praise throughout the industry for its world class handling and driver experience. It was the first and only track oriented muscle car in the past 40 years, and Ford wanted to capitalize on the new market but, more importantly, outperform Chevy in the process. Ford went to great lengths to do so.

The first major improvement over the normal, more pedestrian, Mustang GT is the engine. The GT350R features an all-new 5.2 liter flat plane crank V8 engine developed by Ford's performance powertrain division. This engine is vastly different from any other American engine ever made. American V8's historically use cross plane crankshafts and superchargers to produce high horsepower numbers. However, Ford saw the opportunity to build an exclusive engine to prove the GT350R was more than a muscle car, and in fact, a true sports car. Ford overcame the vibration and balance issues caused by flat plane crank geometry to design a crankshaft that is smaller and lighter, which allows for higher and faster revving. This crankshaft design is what Ferrari uses to produce their famous high revving, naturally aspirated V8 monsters and is what makes the 526 horsepower, 429 pound feet of torque 5.2 liter engine of the GT350R so special.



Other powertrain upgrades include the transmission and axle. The transmission is a revised Tremec TR3160 six-speed manual with a lightweight, twin-disc clutch. The transmission has been optimized for the track and allows for extremely quick, precise shifts and time-saving heel to toe downshifts. The axle includes a Torsen limited-slip diff with a 3.73:1 final-drive ratio. This limited slip differential helps the Shelby put power down while exiting corners and eliminates time-sapping wheel spin. The entire powertrain is either completely new or revised compared to the 2016 Mustang GT and gives the car extreme performance figures. More importantly, this powertrain is unlike any Ford powertrain before it and makes the GT350R truly special.

Carbon Fiber is the new lightweight, high strength material being implemented across the automotive industry on high end performance cars because weight is a huge component of handling and speed. Thus Carbon fiber was a natural fit for many of the GT350R's performance parts. The rear spoiler, front splitter, and wheels are all made of the exotic material. The carbon fiber wheels produced for the GT350R are the first carbon fiber wheels used on a production vehicle and improve driving dynamics tremendously. Each wheel weighs only 18 pounds

compared to the 33 pounds an equivalent aluminum wheel would weigh. This amounts to a total weight savings of 60 pounds of unsprung weight. Unsprung weight is the mass from suspension and tire/wheel components which has a much larger impact on a car's performance than overall vehicle weight does. The carbon fiber wheels contribute a 60% reduction in unsprung weight and further contribute a 40% drop in rotational inertia which helps the GT350 accelerate faster, brake harder, and carry more speed through corners.



The brakes and tires are another unique part of the GT350R. At all four corners sit massive cross-drilled Brembo brakes that allow for consistent braking throughout a full day at the track. The 15.5 in. front rotors are clamped by 6 piston calipers, while the 15 in. rears make due with 4 piston calipers. Michelin Pilot Sport Cup 2s, specifically engine for the GT350R in a collaboration between Michelin and Ford, wrap the carbon fiber wheels and help the car create immense amounts of grip.

Other performance enhancing parts of the GT350R includes a high flow exhaust and engine intake as well as track tuned aerodynamics. There are four exhaust modes that allow the driver to tune the exhaust sound to their liking while allowing the engine to breathe strong. The high flow intake also helps the monster engine take in enough air to rev to an incredible 8200rpm. The front splitter, front air dams, and rear spoiler are all unique to the GT350R and allow the car to generate downforce that presses the car into the track to provide more grip. Thousands of hours were spent on the GT350R's aerodynamics which is evident by the downforce and low drag coefficient. Additionally, MagneRide dampers keep the car stable by adjusting to the road surface to keep the car level and planted.

## Result

The GT350R is a driver's car. It is made for pure, exhilarating driving and great track performance. It is true to its roots of a stripped-out, street legal racecar. While most new cars are full of electronic aids and heading towards autonomous control, the GT350R asks for full driver involvement and driver skill. The GT350R is a great handling, high revving, comfortable street car that can be driven to and from the track for an all-day track day. Ford hit their target and created a world class sports car filled with new performance technology while keeping the spirit of the original GT350 alive. Chevy has a reason to worry.

<b>2016 Ford Mustang Shelby GT350R</b>	
Base Price	\$61,370
Vehicle Layout	Front Engine, RWD
Engine	32 Valve DOHC 5.2l V-8
Transmission	6 Speed Manual
Curb Weight	3650 lbs.
Dimensions (L x W x H)	189.7 x 75.9 x 53.6 in
0-60	3.7 s
Fuel Economy	14/21/16 MPG

Written by John Gritt