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2012 Fiat 500 Abarth: ENGINEERING

- New 2012 Fiat 500 Abarth features performance hardware and tuning for world-class ride and handling
- Abarth-tuned chassis with Frequency Selective Damping (FSD) front shock absorbers automatically provide the dampening needed for the track or uneven roadways
- Lowered ride height, beefier rear suspension, larger brakes and wider tires deliver added driver confidence
- 500 Abarth engineers tested the new 2012 model for more than 2 million miles
- Development vehicles raced “round-the-clock” in 24-hour endurance challenges to prove durability

November 15, 2011, Auburn Hills, Mich. - Like the European model, the new 2012 Fiat 500 Abarth is designed, engineered and tested to deliver the high-performance driving and enduring capabilities needed for track use. And to make sure the 500 Abarth provides the highest levels of driving thrill, every piece of hardware and every mile of development tuning has been thoroughly examined to ensure the European model's DNA is delivered to North American driving enthusiasts.

“The new 2012 Fiat 500 Abarth is more than the addition of power and world-class technology, it's designed, developed and tuned to deliver the responsiveness, control and precision a performance driver wants and expects,” said Joe Grace, Vehicle Line Executive, Fiat 500 Abarth. “And for our owners who plan on testing the car's high-performance capabilities and limits, we have continued to develop from the proven European models to ensure the new 500 Abarth endures on the track.”

Like the European-spec 500 Abarth derived from the standard Cinquecento, the 2012 Fiat 500 Abarth builds off the North American adapted Fiat 500 Sport – and adds the legendary performance and handling capabilities that have made Abarth models an international success both on and off the track.

Track ready, precision-tuned chassis

The new 2012 Fiat 500 Abarth features an enhanced front- and rear-suspension design to deliver the precision handling, steering and refinement needed for high-performance driving.

Compared with the front-suspension design of the Fiat 500 Sport model, the new 500 Abarth features a unique MacPherson suspension design with a 40 percent stiffer spring rate and 0.6-inch (15 mm) lower ride height for improved handling and minimal body roll. Abarth-designed cast iron front-lower control arms provide improved lateral stiffness, while an increase in negative camber to -1.5 degrees delivers improved grip and steering precision.

New dual-valve Frequency Selective Damping (FSD) KONI® front-shock absorbers replace standard twin-tube units and deliver an innovative two-in-one solution. This patented technology provides the road holding and handling characteristics needed for maximum grip and performance. In addition, the FSD system actively filters out high-frequency suspension inputs from uneven road surfaces and adjusts for improved comfort and smoothness.

The beefier rear-suspension design of the Fiat 500 Abarth takes the Fiat 500 Sport model's (already 300 percent stiffer than the European Fiat 500) twist-beam design further, with a 40 percent more torsionally rigid rear axle with strengthened coil-spring supports for greater durability. A new 0.87-inch (22 mm) Abarth-specific solid rear-stabilizer bar increases cornering grip. For improved handling, minimal body roll and ride-height control (when fully loaded), the new Fiat 500 Abarth features 20 percent stiffer rear springs with 0.6-inch (15 mm) lower ride.

Abarth-tuned steering

The new 2012 Fiat 500 Abarth features a 15.1:1 (up from 16.3:1) steering-gear ratio for 10 percent quicker steering to

enhance responsiveness, maneuverability and high-performance feel. Compared to the Fiat 500 Sport, the 500 Abarth features a uniquely tuned electronic power steering (EPS) calibration for increased steering response and feedback.

Track-proven brake system

The Fiat 500 Abarth features a high-performance brake system with an Abarth-tuned electronic stability control (ESC) system designed for at-the-limit driving.

At the front, the Fiat 500 Abarth features 2.1-inch (54 mm) diameter single-piston front-brake calipers with semi-metallic brake linings for greater stopping power. Larger 11.1-inch (282 mm) (up from 10.1-inch; 257 mm) diameter ventilated rotors provide additional surface-heat dissipation. The 9.4-inch (240 mm) rear disc-brake system features single-piston brake calipers with semi-metallic brake linings to mitigate brake fade at higher temperatures. Both front- and rear-brake calipers are lacquered in Rosso paint for an athletic look.

An Abarth-tuned ESC system features a three-mode calibration to maximize the new 2012 Fiat 500 Abarth's handling capabilities on and off the track. When ESC is selected from "On" to "Partial Off" or "Full Off" on the instrument panel, the 500 Abarth's innovative Torque Transfer Control (TTC) system maximizes throttle performance during on-throttle cornering.

Lightweight wheels with high-performance tires

Standard on the 2012 Fiat 500 Abarth, 16 x 6.5-inch cast-aluminum wheels feature a race-inspired design and are fitted with 195/45 R16 Pirelli Cinturato P7 tires that deliver all-season traction and low-noise characteristics. These tires are inflated with a higher tire pressure to optimize the 500 Abarth's suspension tuning.

For even more performance, larger and wider 17 x 7-inch wheels are available on the Fiat 500 Abarth. With forged-aluminum construction, these race-inspired wheels keep this Cinquecento lightweight at each corner (18.9 lbs. compared to the standard 16-inch wheels at 18.3 lbs.), while delivering strength and track-tested durability. When equipped with these larger wheels, high-performance three-season Pirelli P-Zero Nero tires feature a 205/40 R17 sizing for a wider stance and a reduced profile for improved handling.

Putting the new 2012 Fiat 500 Abarth to the test

Public road and race track reliability and durability testing, initially done by FIAT prior to the Fiat 500 Abarth's European launch, was conducted again in North America to validate the recent engineering changes, as well as to collect feedback from American drivers.

In addition to the 4 million development miles (6.4 million kilometers) of the North American Fiat 500, plus the quality-proven engineering of the European 500 Abarth, the new 2012 Fiat 500 Abarth added more than 2 million additional miles (3.2 million kilometers) during its reliability and durability evaluations at the Chrysler Group's scientific labs, proving grounds, race tracks and on public roads in various climates.

The fleet of early production Fiat 500 Abarth vehicles was tested day and night on various public road surfaces in different North American climates to identify any potential reliability issues. Chrysler Group's trained drivers also scrutinize functional aspects of each vehicle, such as heating and ventilation systems, storage compartments and window operation. The development team reviews the test results each day and makes any necessary adjustments to ensure the quality of customer vehicles.

Taking a page out of Chrysler Group's SRT brand's durability test manual, engineers subjected Fiat 500 Abarth prototypes to 24-hour endurance events on the harsh surfaces of the Nelson Ledges Road Course in eastern Ohio. Even with a high-end performance car, many race drivers consider it a feat to finish a 24-hour endurance race without brake system, engine or suspension failures. The Abarth prototypes not only survived the challenge, but delivered dependable performance as they clocked consistent lap times from start to finish.

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