



TECHNICAL NOTE 5.0

Stopping Distance Comparisons:

Iron Dual-Cast (OEM) vs. 2-Piece Floating Iron vs. Carbon Ceramic.

Test Vehicle: 2015 Mercedes Benz C63 AMG Edition 507. No modifications, all OE.

Background

This technical paper seeks to compare the performance variances between OE, 2-piece floating and CCB's in a "real-world" scenario, using the exact same performance vehicle set-up and ambient conditions.

The tests were conducted on a controlled stretch of smooth, paved, clean and level roadway. Atmospheric temperatures were within +/- 5C during tests.

All brake systems were pre-burnished prior to testing. It should be noted that the OE rotor & pad setup (OE# 212.345.234 fronts and 212.453.4536 rears) consisted of rotors and pads with 74,600km (54,200mi). It was estimated that the pads had approximately ~20-30% available depth from original and the rotors exhibited an approximate ~0.5mm depth of wear. Thus, the braking potential of the OE set-up was expected to be diminished vs the new, burnished set-up of the new 2-piece floating iron and new CCB's.

The 2-piece floating iron rotors and carbon ceramic rotors were supplied by Performance Brake Systems Inc. (PBS) of Toronto, Canada. Pads were provided by PowerStop Corp., utilizing Z26 EXTREME Series pads on the front and Z23 EVOLUTION Sport on the rear.

Temperature monitoring pre, during and post testing were performed using both a high-temperature IR sensing laser probe (AOPUTTRIVER model AP-985B).

Stopping times and distances were determined with high accuracy using the DRAGY DRG70-C GPS-based performance meter track system & software.

Iron Dual-Cast (Factory OE)

Total 4-corner rotor weight: 96 / 44 lbs/kgs

150km/hr to 0km/hr.

Run 1:

- Initial Rotor Temperature: 155 c.
- Time: 4.5 s.
- Final Rotor Temperature: 440 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 2:

- Initial Rotor Temperature: 290 c.
- Time: 4.9 s.
- Final Rotor Temperature: 475 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 3:

- Initial Rotor Temperature: 325 c.
- Time: 6.5 s.
- Final Rotor Temperature: 548 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

0km/hr to 150km/hr. (Race Start Mode for consistency)

Run 4:

- Time: 9.5 s.

Run 5:

- Time: 9.7 s.

Run 6:

- Time: 9.3 s.

2-Piece Floating Iron

Total 4-corner rotor weight: 78 / 35 lbs/kgs

150km/hr to 0km/hr.

Run 1:

- Initial Rotor Temperature: 140 c.
- Time: 4.1 s.
- Final Rotor Temperature: 410 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 2:

- Initial Rotor Temperature: 260 c.
- Time: 4.6 s.
- Final Rotor Temperature: 380 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 3:

- Initial Rotor Temperature: 275 c.
- Time: 5.1 s.
- Final Rotor Temperature: 480 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

0km/hr to 150km/hr. (Race Start Mode for consistency)

Run 4:

- Time: 9.1 s.

Run 5:

- Time: 9.4 s.

Run 6:

- Time: 9.2 s.

Carbon Ceramic Brakes

Total 4-corner rotor weight: : 40 / 18 lbs/kgs

150km/hr to 0km/hr.

Run 1:

- Initial Rotor Temperature: 110 c.
- Time: 3.7 s.
- Final Rotor Temperature: 310 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 2:

- Initial Rotor Temperature: 220 c.
- Time: 3.9 s.
- Final Rotor Temperature: 370 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

Run 3:

- Initial Rotor Temperature: 250 c.
- Time: 3.8 s.
- Final Rotor Temperature: 430 c.
- *Exactly 10min cool down period between runs, to ensure consistent comparisons.*

0km/hr to 150km/hr. (Race Start Mode for consistency)

Run 4:

- Time: 8.8 s.

Run 5:

- Time: 8.6 s.

Run 6:

- Time: 8.9 s.