

BREMBO OFFERS A BEHIND-THE-SCENES LOOK AT OPEN-WHEEL BRAKING SYSTEM

Emphasizing Challenges in Designing Different Braking Systems for F1 and IndyCar during Press Conference at Circuit of the Americas

AUSTIN, Texas, Nov. 15, 2012 – Celebrating the return to Formula One racing in the United States, the second largest market for Brembo, the company co-hosted a press conference with Ferrari today at Austin's Circuit of the Americas offering a **behind-the-scenes look at the design of F1 brake systems**.

Brembo used a **video animation** specially produced in collaboration with Ferrari to demonstrate the **highest level of sophistication with the F1 brake system**. In the virtual tour, in fact, Brembo takes the viewer inside and 'through' every single component, highlighting the behavior and the critical role of a braking system during the race.

Both Scuderia Ferrari driver Felipe Massa and engineer Diego Ioverno as well as Riccardo Cesarini, Managing Director for Brembo performance participated in the presentation answering questions from the audience of US and international media.

"Ever since Ferrari asked Brembo to supply brakes for his F1 team in 1975, Formula One has provided Brembo with the most advanced R&D laboratory for the highest level of brake design and engineering," stated Cesarini. "The experience gained over the past 37 years gave Brembo's design team the unique expertise necessary to develop braking systems for the road as well as the track."

Being the exclusive brake supplier for the IndyCar, Brembo also took the opportunity to highlight the differences between F1 and IndyCar brake systems. Some differences are fairly obvious, such as the chassis size, weight (650 kg in F1, 850 kg in IndyCar) and horsepower (800 in F1, 650 in IndyCar). But probably the most significant difference affecting the brake systems is that **Formula One** teams demand a great deal of **customization** in the **design** while **IndyCar** requires **one unique system** for all teams and all tracks.

DIFFERENCES IN CALIPERS

While both series use six-piston monobloc calipers machined from billet, they use **different aluminum alloys** (aluminum-lithium in F1 and aluminum alloy in IndyCar.) Whereas IndyCar teams must use the same caliper throughout, F1 teams can customize their caliper bodies to be different shapes front and rear.

DIFFERENCES IN DISCS

Although both series use carbon-carbon discs, there are significant **differences** in the **design of the disc and its cooling system**. The maximum temperature reached in F1 braking is 2192 °F (1200 °C) whereas IndyCar brakes run "cooler" at 1742 °F (950 °C). These extreme temperatures caused Brembo engineers to adapt the design of the cooling system to incorporate as many as 1000 vent holes in the F1 disc compared to 72 holes for IndyCar rotors. The F1 discs are also slightly smaller (278mm x 28mm) than IndyCar (328mm x 30mm).

Involved with Formula 1 since 1975, Brembo claims leader status yet again this year in the premier motorsport competition, as supplier of brake systems to six of the current teams: Red Bull Racing, HRT F1 Team, MERCEDES AMG PETRONAS Formula One Team, Sauber F1 Team, Scuderia Ferrari and Scuderia Toro Rosso.

About Brembo SpA

Brembo SpA is the world leader and acknowledged innovator of the disc brake technology for automotive vehicles. Brembo supplies high performance brake systems - for the most important manufacturers of cars, commercial vehicles and motorbikes worldwide - as well as clutches, seats, seat belts and other components for racing. Moreover, Brembo is also a leader in the

racing sector and has won more than 200 championships. Today the company operates in 18 countries of 3 continents, with 22 production and business sites, and a pool of more than 7.023 employees, about 10% of whom are engineers and product specialists active in the R&D. 2012 turnover 3rd Q year-to-date is € 1,044.6 million (results as of September 30 2012). Brembo is the owner of the Brembo, Breco, Bybre, Marchesini, Sabelt brands and operates through the AP Racing brand.

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