PROJECT G35
AP RACING BIG BRAKE TRACK TEST
50 PERCENT LESS HEAT, 2.5 SECONDS FASTER PER LAP AND 100 PERCENT GANGSTER

Story and Photos **Dave Pratte**

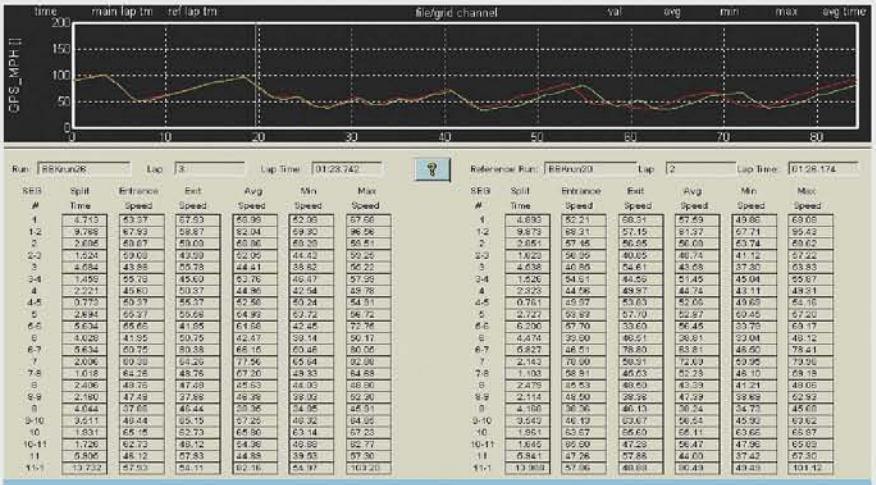
From the very first time we track-tested our '06 Infiniti G35 Coupe, its most glaring shortcoming was clearly the braking system. When a car weighs 3,500 lbs like our G coupe does, it needs some serious brakes. But even on the streets, our G's factory braking system felt soft and slow to respond to even the most aggressive use of the brake pedal, and at the track the entire braking system would overheat so severely in just a few laps that an unscheduled trip into the weeds would be virtually unavoidable.

We thought that upgrading the G's brake pads to something a little more performance-oriented (Hawk HPS front and HP+ rear)—along with some high-performance brake fluid (Castrol SRF)—would make longer lapping sessions on the track possible. Unfortunately, this did little to prolong heat soak and terror-inducing brake fade, so we knew the only real solution would be a big brake kit upgrade, which would function as a larger heat sink, a more efficient dissipater of that heat and a more powerful braking system by virtue of its multiple caliper pistons that apply even pad pressure across the larger swept area of larger-diameter rotors.

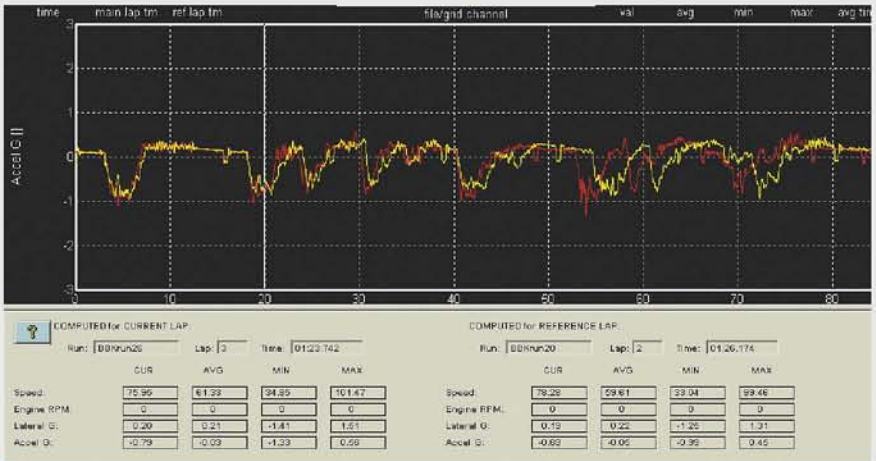
Having run AP Racing calipers and rotors on my EG Civic Road Race/Time Attack car for quite a few years now, I knew this was a company that would help me stop faster and more consistently than my competition. That's because AP Racing has been building world-class braking systems for more than 30 years and been featured on winning machines in series that include Formula 1, World Rally Car, Indy Racing League and NASCAR—just to name a few. Perhaps the most impressive

BRAKE LOCATION	OE BRAKE SYSTEM	AP RACING BBK
FRONT LEFT ROTOR	734 / 1,000+	500 / 572
FRONT LEFT CALIPER	334 / 500	228 / 293
FRONT RIGHT ROTOR	716 / 1,000+	536 / 536
FRONT RIGHT CALIPER	338 / 505	239 / 284
REAR LEFT ROTOR	639 / 1,000+	329 / 471
REAR LEFT CALIPER	333 / 482	221 / 277
REAR RIGHT ROTOR	597 / 1,000+	347 / 412
REAR RIGHT CALIPER	313 / 493	214 / 271

Brake temps (in degrees Fahrenheit) after two and four hot laps around our test track show how efficient the AP Racing big brakes are at controlling and dissipating heat.



GRAPH 1: This comparative mph data shows that maximum mph increased consistently, thanks to AP's later braking capabilities.



GRAPH 2: Notice the improvement in negative acceleration or braking g-forces generated by the AP Racing braking system (red line) compared to OE (yellow line). Less time on the brakes means more time on the gas!

feat of all happened in 1999 when the AP Racing-equipped BMW V-12 LMR became the first machine in history to win the 24 Hours of Le Mans without needing to change the brake rotors or pads. But AP Racing isn't just a racing brake manufacturer. AP Racing brakes are OE equipment for the manufacturers of some of the world's fastest street cars including Aston Martin, Bugatti, Koenigsegg, Lotus, Noble, MG, Morgan Spyker and more.

As you would expect from a company with 616 Formula 1 wins by teams with its braking and/or clutch systems on board (at the end of the '07 season), AP Racing is a world leader in the development of high-performance brakes. From the company's state-of-the-art 3-D modeling and design to its finite element analysis CAD facilities to R&D facilities that include a special dynamometer that simulate true racing speeds as experienced by the braking system, AP Racing has been instrumental in developing many of the most important advances in braking technology over the last 30 years, including the carbon discs and pads featured on today's Formula 1 machines.

In North America, it's Brake Pros (a division of STILLEN) that has partnered with AP Racing to bring the company's unsurpassed braking system technology to go-fast enthusiasts like you and me. AP uses the latest in materials, post-treatments, coatings and manufacturing methods to ensure its calipers perform to the highest level possible on the street and at the racetrack, and Brake Pros ensures that its street kits developed for a wide range of vehicle applications offer bulletproof reliability and perfect fitment.

We opted for six-piston front and four-piston rear AP Racing brakes on our G35 because we

The six-piston AP Racing front calipers and 14.25-inch front rotors dwarf the puny OE equipment. Bye bye, brake fade!

The four-piston AP Racing rear BBK (right) perfectly balances the braking system front to rear.

Using an infrared pyrometer like we did is a great way to assess the heat control and dissipation of your brakes.

Bleeding the brakes to make sure there's no air in the system was the last step of the installation before bedding in the rotors and pads on the track.

The AP Racing BBKs fill up our 18-inch Advan wheels beautifully, but more importantly they've turned the G's biggest weakness (stopping power) into one of its biggest strengths.

wanted the largest possible heat sink to absorb all the energy our hefty Infiniti would throw at it. The front and rear kits come complete with Mintex Xtreme Motorsport brake pads, DOT-compliant stainless steel brake lines and all the brackets and fasteners required to make them truly turnkey and very easy to install, even at the track like we did. The two-piece AP Racing aluminum calipers that come standard in these kits have more rigidity than most monoblock designs and feature a hard anodized finish as well as dust seals and anti-rattle clips. The huge 14.25-inch front and 13-inch rear rotors are slotted (to increase pad bite and prevent pad glazing) and cross-drilled (to reduce weight), but the real magic happens inside, where the curved vanes shed internal heat while reducing unsprung mass.

But before we installed the AP BBKs on our G, we needed to baseline the OE braking system. The track was a bit slower than usual due to heavy rain the night before, but

There's nothing sexier than seeing those big AP calipers floating behind the wheels at 100 mph, knowing they'll haul this 3,500-lb missile down to speed with zero drama lap after brake torturing lap.

the conditions were dry and warm throughout the test day. With a best lap time of 1:26.174 (recorded using our MSD G2X data acquisition system), I was satisfied that this was a fair baseline under the conditions. We also did a two-lap and a four-lap session and immediately pitted to take brake temperatures using an infrared pyrometer that is capable of reading temperatures up to 1,000 degrees Fahrenheit, later repeating this procedure with the AP Racing brake kits installed.

As you can see in Chart 1, the AP Racing brakes cut heat by almost 50 percent, but what these numbers don't tell you is that after two hot laps the OE brakes were starting to fade, and by the fourth lap I had virtually no braking power whatsoever because the pads and fluid were completely overwhelmed by the heat buildup. With the AP brakes, on the other hand, I didn't experience even a hint of brake fade after an extended lapping session where I abused the brakes as hard as I could.

With almost a 50 percent decrease in brake temperatures came the desperately needed braking consistency that our G35 lacked, and the greatly improved stopping power of the AP Racing big brake kits also delivered huge improvements in the lap-time department. After carefully bringing the Mintex Xtreme Motorsport pads and AP rotors up to temperature and then letting them fully cool as the break-in procedure requires, I hit the track and within two laps had already bettered my lap time by a full 2 seconds. After a brief pause to measure brake temperatures, I hit the track again and this time set a best ever lap time of 1:23.742, almost 2.5 seconds quicker than the best baseline set with the OE braking system.

As the mph data from the G2X system showed, I was able to brake later, as demonstrated by the higher mph readings at the end of sections 1-2, 6-7, 7 and 11-1 (see Graph 1), which all end in heavy braking zones. The data also showed greatly improved stopping power in the form of higher negative acceleration g-forces, with peak deceleration figures rising from 0.99 g's with the OE brake setup to an astounding 1.33 g's with the AP Racing brakes installed (see Graph 2).

Having completely eliminated brake fade, cut track operating temps in half and improved lap times by almost 2.5 seconds, it's impossible not to be completely blown away by the performance of the AP Racing big brake setup. To be honest, I thought the Mintex pads might show signs of fade on a track with four heavy braking zones, but the Xtreme Motorsport compound was very impressive lap after fade-free lap, and on the street they provide a progressive feel while the AP/Brake Pros kit give the brake pedal a firmer and more responsive feel, thanks to the stainless brake lines. Oh, and did I mention they look seriously gangster tucked in behind our big 18-inch Yokohama Advan RS wheels?

With the brakes now a strength instead of a glaring weakness, next up we've got some ECU tuning and aero mods, all of which we'll test at the track.

{ SOURCEBOX }

Brake Pros
(A Division of STILLEN)
G35 Front and Rear AP Racing Brake Kit
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