

# INSURANCE INSTITUTE FOR HIGHWAY SAFETY

## NEWS RELEASE

August 2, 2007

### **BUMPERS ON LUXURY CARS AREN'T LUXURIOUS: WORST IS INFINITI G35; 4 OF 11 CARS SUSTAIN MORE THAN \$10,000 DAMAGE IN 4 MINOR BUMPS**

ARLINGTON, VA — Bumpers, even those on expensive cars, don't resist damage in low-speed impacts. The Infiniti G35, the worst performer, sustained almost \$14,000 damage in a series of 4 tests conducted at 3 and 6 mph by the Insurance Institute for Highway Safety. The Saab 9-3 was the best, sustaining \$5,243 damage. Only 3 cars sustained less than \$6,000 damage, while 4 would cost more than \$10,000 to fix.

"The Infiniti was a disaster, and even the Saab sustained way too much damage in these low-speed impacts," says Institute senior vice president Joe Nolan. "There shouldn't be much or any damage in collisions at these speeds, especially to expensive and presumably well-made cars."

#### **BUMPER PERFORMANCE IN LOW-SPEED CRASH TESTS VEHICLE REPAIR COSTS**

	Front full width	Front corner	Rear full width	Rear corner	TOTAL DAMAGE
Saab 9-3	\$1,476	\$1,076	\$1,722	\$969	<b>\$5,243</b>
Audi A4	\$976	\$2,038	\$918	\$1,899	<b>\$5,831</b>
Lincoln MKZ	\$1,001	\$1,966	\$2,330	\$669	<b>\$5,966</b>
BMW 3 series	\$3,658	\$1,256	\$989	\$778	<b>\$6,681</b>
Acura TSX	\$1,693	\$1,274	\$3,430	\$1,157	<b>\$7,554</b>
Volvo S60	\$4,517	\$543	\$2,142	\$1,022	<b>\$8,224</b>
Lexus IS	\$4,695	\$2,223	\$1,922	\$737	<b>\$9,577</b>
Lexus ES	\$3,921	\$2,093	\$3,709	\$1,101	<b>\$10,824</b>
Mercedes C class	\$5,486	\$963	\$3,728	\$877	<b>\$11,054</b>
Acura TL	\$4,985	\$1,244	\$3,814	\$1,156	<b>\$11,199</b>
Infiniti G35	\$5,223	\$3,544	\$4,035	\$1,181	<b>\$13,983</b>

**Why bumpers don't bump:** The purpose of a bumper is to absorb the energy of a low-speed collision before it damages expensive-to-repair parts like fenders and hoods. But there are multiple problems, the first of which is that the bumpers on colliding vehicles often don't line up vertically so they don't engage to begin with. Even some that do line up don't stay engaged during an impact. Their aerodynamic styling may allow them to slide under the bumpers of

— MORE —

the vehicles they strike. This means they can't do the job of energy absorption. Another problem is that the bars underneath bumper covers, which are supposed to do the main work of absorbing crash energy, often aren't up to it. They may not be big enough to provide much protection from damage, especially if they don't extend to vehicle corners, or they may be too flimsy to absorb much energy.

Something else driving high repair costs after minor bumps is the price of replacement parts to fix the damage. This is especially true of luxury cars, which are expensive not only to purchase but also to repair.

To assess and compare bumper performance in low-speed impacts, the Institute conducts a series of 4 low-speed tests — full front and rear into a barrier designed to mimic the front or back bumper on another vehicle plus front and rear corner impacts. The full-width impacts are conducted at 6 mph while the more demanding corner impacts are run at 3 mph.

These tests replace the 5 mph flat-barrier and pole tests the Institute conducted for decades to assess bumper performance. The new tests, which reflect years of development, more closely replicate the damage patterns in today's low-speed collisions between vehicles. The first set of results of the Institute's new tests involved inexpensive and moderately priced midsize cars, which sustained up to about \$9,000 damage in the 4 tests.

"Luxury cars don't perform any better than cheaper cars," Nolan points out. "There's nothing luxurious about shelling out thousands of dollars to fix damage from a bump at a speed about like a brisk walk."

**Make bumpers wider and taller:** To do an effective job of managing crash energy, the bars underneath bumper covers have to be long enough to protect car bodies out to the front and rear corners. If a bar doesn't extend far enough, a minor corner impact is likely to cause lots of damage, even compromising lights and other safety-related parts. The headlight on 1 car the Institute recently tested was damaged so much that it wouldn't illuminate, and those on another 7 sustained lesser damage.

Bumpers also have to be tall enough to engage, and to stay engaged with, the bumpers on other vehicles in collisions, even during emergency braking. Otherwise the bumpers bypass each other when the vehicles collide, overriding and underriding so that crash energy goes right through and crumples the vehicle body.

The Mercedes C class is a good example. Its front bumper is mounted so low that it underrode the barrier in the Institute's front full-width test, escaping virtually unscathed. A little touch-up paint was all that was needed to repair the plastic bumper cover. What absorbed the energy of the impact was the C class's grille, hood, radiator, headlight, and air conditioning condenser, all of which were damaged. This is how the repair costs escalated to more than \$5,000, the highest total sustained by any of the 11 cars in any single test.

"This is exactly what we don't want to see," Nolan says. "The car body took the hit."

On the other hand, the front bumper system on the C class includes a longer bar than on the other luxury cars. This reduced damage in the corner impact to less than \$1,000, second best behind the Volvo S60's \$543.

**Flimsy bumpers fail:** Even when bumpers engage in collisions without under- and overriding each other, the components may fail. Bumper bars may not be strong enough. Energy-absorbing materials (foam or something similar) may not be up to the job.

The Audi A4 was the best performer among the luxury cars in both front and rear full-width tests. Equipped with components that work like shock absorbers to dissipate crash energy before it can damage the car body, the A4 sustained less than \$1,000 damage in each test.

"It isn't coincidental that the A4 is the only luxury car among the 11 we tested with this kind of absorbers, which usually outperform other methods of managing the energy of crashes. If the A4 had longer bumpers for protection in corner impacts, it probably would have been the best performer among this lot of cars instead of second to the Saab 9-3," Nolan says. A bonus of stroking energy absorbers is that they don't have to be replaced after every impact. They can absorb energy again in subsequent collisions.

**Federal rules don't cover bumpers on minivans, pickups, or SUVs:** The barrier the Institute uses to test bumpers is set 16 to 18 inches off the ground, in keeping with a federal rule that specifies a zone for car bumpers 16 to 20 inches from the ground. The idea is to ensure that car bumpers line up reasonably well so they engage each other in collisions, allowing them to absorb crash energy. But there's a problem in collisions with other vehicles because the rule that applies to cars doesn't cover minivans, pickup trucks, or SUVs. The bumpers on these vehicles often are much higher off the ground, failing to line up with those on cars.

For example, the bumper on the Infiniti G35 luxury car is much lower than the one on the Infiniti FX35. An Institute test involving these vehicles indicates that in a collision into the back of the SUV, the G35 would slide right under the bumper system, especially if the driver were braking hard, which would cause the front end of the car to dip.

"Infiniti equipped this car with a bumper that wouldn't prevent damage in a minor collision with the same company's SUV," Nolan points out. "This makes no sense, and it won't be solved by tinkering with the bumpers on cars alone. The federal rules have to be applied to minivans, pickups, and SUVs too. Only then will we start to see good bumper match-up in collisions at low speeds."

**Sky-high parts prices:** Even when bumper systems perform adequately to minimize damage in low-speed collisions, the damage that does occur still can empty a consumer's wallet because of the price of the parts needed to restore the vehicle. In the rear full-width test, for example, damage to the A4 was confined to the bumper cover. However, the cost of the cover alone approaches \$600. Then it has to be attached to the car body and painted to match.

Headlights were damaged in 15 of the 22 frontal tests the Institute conducted, 8 corner impacts and 7 full-width ones. It cost \$847 for the G35's replacement headlight and \$1,046 for the one on the Lexus ES, not counting installation charges.

"If an automaker is going to charge this much for a headlight, it ought to do a better job of shielding such an expensive part from damage in a minor bump," Nolan points out.

**Put luxury in bumpers too:** It wouldn't take much for automakers to reduce the cost of repairing the damage that occurs in low-speed collisions. Nolan points to 3 main things automakers already know how to do and could be doing:

1. Make the bumper bars longer so they protect headlights and other critical and costly equipment at the corners of vehicles. The bars all could be as wide as those on the Volvo S60, which was the only car that limited damage in the front corner test to the bumper cover alone. The rest of the luxury cars sustained damage to fenders and other body parts.
2. Make bumpers taller so they engage the bumpers on higher riding SUVs and pickup trucks instead of underriding them, even during emergency braking.
3. Don't sacrifice function for style by mounting bumpers too close to the car body. This makes for a sleek look, but it doesn't leave much room for absorbing crash energy. Mount bumper bars farther out and use the available space under a bumper cover for energy absorption.

Without these design changes, "we can't say anything good about the bumpers on these luxury cars," Nolan concludes. "There's nothing exemplary about even the best performer, the Saab 9-3. It simply avoided racking up the most damage in any single test and ended up coming out the best of a mediocre lot."

**End of 5-page release on bumper performance in low-speed tests  
VNR Thurs. 8/2/07 at 10:30-11 am EDT (C) AMC3/Trans. 3 (dl3760H)  
repeat at 1:30-2 pm EDT (C) AMC3/Trans. 3 (dl3760H); dedicated**

**For more information go to [www.iihs.org](http://www.iihs.org)**