
INSURANCE INSTITUTE FOR HIGHWAY SAFETY

NEWS RELEASE

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CRASH TEST RESULTS: MIDSIZE LUXURY CARS DO WELL; BMW 328i IS TOP PERFORMER IN GROUP OF FIVE CARS

ARLINGTON, VA – Five new cars, all midsize luxury models, have been tested in frontal offset impacts at 40 mph. Three cars are rated good — the BMW 328i, Volvo S80, and Cadillac Catera. The other two midsize luxury cars, Saab 9-5 and Audi A6, are rated acceptable. These ratings (see attached list) are based primarily on performance in 40 mph crash tests conducted by the Insurance Institute for Highway Safety.

“Overall this is a good group of vehicles,” Institute president Brian O’Neill points out. “It’s encouraging that none of the cars we tested is rated marginal or poor. They all earn good or acceptable ratings.”

The top-rated car is the BMW 3 Series. During the frontal offset crash test, the occupant compartment held its shape well, without much intrusion into the compartment, and measures taken from the driver dummy indicated low likelihood of injury. These outcomes earn the BMW a ‘best pick’ designation.

Another good performer is the 2000 model Volvo S80. “It performed very well in the 40 mph crash test,” O’Neill notes, “but we had some concerns about its airbags. Specifically because of the sensitivity of the sensors the airbags inflated in a 5 mph test. There also was concern about the temperature of the airbag gas near the driver’s hands. These are why the 2000 Volvo doesn’t earn a ‘best pick’ designation. The manufacturer recently notified us that it has modified the airbag designs for 2001 models to address these concerns. This means the 2001 model Volvo S80 will earn a ‘best pick’ rating.”

— MORE —

Structural design is key to good performance: The Institute's frontal offset crash test into a deformable barrier is especially demanding of vehicle structure. Only the driver side of the front of a vehicle hits the barrier, so a relatively small area of the front-end structure must manage the crash energy. This means intrusion into the occupant compartment is more likely to occur than in a full-width test.

"Good structural design is the key to good performance in the offset test," O'Neill explains. "If a car's front-end structure absorbs and manages the crash energy so the occupant compartment remains largely intact, with little or no intrusion, then the dummy's movement is likely to be controlled, and injury measures are likely to be low. In contrast, poor structural design means greater likelihood of poor control of the dummy and high injury measures."

O'Neill adds that "the way to protect people in serious frontal crashes is to ensure the occupant compartment, or safety cage, remains intact. When this happens, the restraint system — the safety belts and airbags — can prevent significant injuries, even in serious crashes. But when major intrusion occurs, even the best restraint system cannot prevent all injuries. It's the same concept as shipping a fragile object — it doesn't matter how well it's protected by foam or other packaging inside a box, if the box gets seriously damaged during transit, the object inside is likely to break. Today more of the vehicles we test have good structural designs, and their occupant compartments, or safety cages, remain largely intact."

The good vehicle designs in the Institute's latest crash tests aren't happening because government regulation is demanding them. "It's because more and more automakers are incorporating offset tests into the vehicle development process. The manufacturers are doing this because they know many car buyers want the best occupant crash protection they can get," O'Neill says.

Institute and government crash tests complement each other: The Institute's crashworthiness evaluations are based primarily on results from the frontal offset crash test at 40 mph. Each vehicle's overall evaluation is based on three aspects of performance — measurements of occupant compartment intrusion, injury measures from a Hybrid III dummy positioned in the driver seat, and analysis of slow-motion film to assess how well the restraint system controlled dummy movement during the test.

The federal government has been testing new passenger vehicles in 35 mph crash tests since 1978. This New Car Assessment Program has been a major contributor to crashworthiness improvements — in particular, improved restraint systems in new passenger vehicles. The Institute's offset tests, conducted since 1995, involve 40 percent of a vehicle's front end hitting a deformable barrier at 40 mph. This test complements the federal test involving the full width of the front end hitting a rigid barrier. Both tests are contributing to improvements in crashworthiness — in particular improved crumple zones and safety cages.

The same 40 mph offset crash test is used to evaluate new cars by the European Union in cooperation with motor clubs and by an Australian consortium of state governments and motor clubs.

**End 3-page release on vehicle crashworthiness
1-page attachment: crashworthiness ratings
Video news release Wed., 5/31, 1-1:30 pm EDT
(C) Telstar 6/Trans. 8; crash test footage & more**

Internet: www.highwaysafety.org

Evaluations

Midsized luxury cars 4-door models

OVERALL EVALUATION	Frontal Offset Crash Test Performance						Other Evaluations	
	Structure/ Safety Cage	Injury Measures				Restraints/ Dummy Kinematics	Head Restraint Design	Bumper Performance
		Head/ Neck	Chest	Leg/Foot Left, Right				



BMW 3 SERIES
2000 models
test vehicle wt. = 3,347 lbs.

G	G	G	G	G	G	A	A	M
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VOLVO S80
2000 models
test vehicle wt. = 3,576 lbs.

G	G	G	G	G	G	M	G	P
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CADILLAC CATERA
1997-2000 models
test vehicle wt. = 3,847 lbs.

G	A	G	G	G	G	A	M	P
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SAAB 9-5
1999-2000 models
test vehicle wt. = 3,527 lbs.

A	A	G	G	G	P	G	G	M
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AUDI A6
1998-2000 models
test vehicle wt. = 3,766 lbs.

A	A	G	G	M	M	A	A	A
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G GOOD **A** ACCEPTABLE **M** MARGINAL **P** POOR

Caution: The kinetic energy a vehicle must absorb in a crash test increases with vehicle weight, so barrier tests are more demanding of heavier vehicles. But people in heavier vehicles in real-world, 2-vehicle crashes typically fare better than people in lighter vehicles (in many single-vehicle crashes, weight offers no safety advantage). This is why **test results shouldn't be compared among vehicles with large weight differences.**

Go to www.highwaysafety.org: This publication summarizes the crashworthiness evaluations of midsized luxury cars. The principal component of each vehicle's evaluation is its performance in a 40 mph frontal offset crash test. Details about each vehicle's test performance, including photographs taken during and after the crash test, are available online at www.highwaysafety.org. Or call the Institute for copies.