

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

NEWS RELEASE

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NEW SIDE IMPACT CRASH TEST RESULTS: SAAB 9-3 IS 1ST CAR TO EARN 'DOUBLE BEST PICK,' 3 OTHER MIDSIZE CARS EARN GOOD RATINGS IN SIDE IMPACT TEST SIMULATING CRASH WITH SUV

ARLINGTON, VA — Four of eight midsize cars earned good ratings in side impact crash tests recently conducted by the Insurance Institute for Highway Safety. None of the cars received a poor rating. The 2004 Saab 9-3, 2004 Acura TL, 2004 Lexus ES 330, and 2005 Mitsubishi Galant are rated good for side impact



The test represents what happens when a passenger vehicle is struck in the side by a pickup truck or SUV.

protection. The 2004 Saab 9-5, 2005 Mercedes C class, and 2005 Volvo S40 earned acceptable ratings. The 2004 Jaguar X-Type is rated marginal (see 3-page attachment).

The better performers among vehicles that earn good ratings are designated "best picks." The Saab 9-3, which also earned a "best pick" designation in the Institute's frontal offset crash test, is the first car to earn this designation in both front and side crash tests. It's a "double best pick."

"Earning a 'double best pick' is a rare achievement," says Institute chief operating officer Adrian Lund. "The only other vehicle to have done this is the Toyota RAV4, a small SUV, and then only when it was equipped with optional side airbags."

— MORE —

The Institute didn't test 11 other midsize inexpensive to luxury car models because the manufacturers are making design changes to improve side impact performance. The Institute will test these models (see attachment for list) in the near future.

Institute's side impact test is more challenging than federal test: In the Institute's side impact test, a moving deformable barrier strikes the driver side of a passenger vehicle at 31 mph. The barrier weighs 3,300 pounds and has a front end shaped to simulate the front end of a typical pickup or SUV. In each side-struck vehicle are two instrumented dummies the size of a short (5th percentile) female, one positioned in the driver seat and one in the rear seat behind the driver.

"The Institute's test is more challenging because the top of the barrier is at the same level as the heads of the test dummies in the car," Lund says. "This is the scenario in real-world side impact crashes where occupants' heads are often struck by the intruding hood of an SUV or pickup."

The federal government's side impact test uses a barrier representing a car's front end. In this test, there's no chance that the heads of the dummies in a struck vehicle will be hit by the intruding barrier.

Saab 9-3 is top performer: All eight cars in this round of crash tests are equipped with standard side airbags with head protection. The Saab 9-3 has side curtain airbags that deploy from the roof as well as airbags that deploy from the side of the car's front seats to protect occupants' chests. All 9-3s built after December 2003 have been modified to improve occupant protection in side impacts.

"The curtain airbag did a good job of cushioning the heads of both the driver and rear passenger dummies," Lund says. "Plus injury measures recorded on the neck, torso, pelvis, and left leg of the dummies all were low. Saab can still make improvements to the 9-3's structure, but in all other areas this was very good performance."

Galant goes from poor to good: This is the second time the Institute has tested the Galant. The 2004 model earned a poor rating for side impact protection when it was tested earlier this year. While side airbags that protect only the torso were available as an option, head protection airbags weren't available. If side airbags are optional, Institute policy is to test the vehicle without the option. The manufacturer may request an additional test with the optional airbags, but in this case Mitsubishi did not request the second test.

"The structure of the 2004 Galant performed very well, but without side airbags the driver dummy's head was struck by the intruding barrier," Lund explains. "There was a possibility of a serious skull fracture or brain injury. Rib fractures and other internal injuries also were possible."

For the 2005 Galant, Mitsubishi added combination head and chest protection side airbags for front-seat occupants as standard equipment and asked the Institute to test the new model.

"The difference in the two tests is dramatic," Lund says. "This time the driver dummy's head was protected from impact with any hard structures, including the intruding barrier."

Even though there was still the possibility of rib fractures or internal organ injuries, the forces recorded in these areas were lower than in the 2004 Galant. In the tests of both the 2004 and 2005 models, the rear dummy's head hit the window frame and sill of the rear door, but these hits didn't produce high head injury measures.

The Galant improved from a poor performer to one of the better performers in the side impact test.

"Mitsubishi should be commended for making side airbags with head protection standard in this relatively inexpensive car. The results for the Galant show that you don't have to spend a lot of money to get good protection in side impact crashes," Lund points out.

Side airbags reduce risks in real-world crashes: Institute research shows that side airbags with head protection are reducing deaths by about 45 percent among drivers of cars struck on the driver side. Side airbags that protect the chest and abdomen, but not the head, also are reducing deaths but are less effective (about a 10 percent reduction in deaths). Before the availability of head-protecting airbags, there was virtually nothing to prevent people's heads from being struck by intruding vehicles or rigid objects like trees or poles in serious side impacts.

"These crash test results confirm what the Institute found is happening in real-world crashes," Lund says. "Side airbags designed to protect people's heads can prevent very serious head injuries. This test is resulting in more manufacturers adding side airbags as standard equipment."

Jaguar is rated marginal: Side airbags with head protection do a good job of protecting people in side impact crashes, but the side structures of passenger vehicles also need to be strong to prevent major intrusion into the occupant compartment.

In serious side crashes some intrusion is inevitable, but it should be minimized. The Jaguar's structure was marginal because the sill below the doors and the B-pillar between the doors were severely crushed.

"This contributed to high forces recorded on the torso and pelvis of the driver dummy," Lund points out. "Head protection in the Jaguar was good, but a real driver might have sustained serious rib fractures, internal organ injuries, and possible pelvic fractures."

How vehicles are evaluated: Each vehicle's overall side evaluation is based on injury measures recorded on two instrumented SID-II dummies, assessment of head protection countermeasures, and the vehicle's structural performance during the impact. Injury measures obtained from the two dummies, one in the driver seat and the other in the rear seat behind the driver, are used to determine the likelihood

that the driver and/or passenger would have sustained serious injury to various body regions. The movements and contacts of the dummies' heads during the crash also are evaluated. This assessment is more important for seating positions without head-protecting airbags which, assuming they perform as intended, should prevent injurious head contacts. Structural performance is based on measurements indicating the amount of B-pillar intrusion into the occupant compartment. Some intrusion into the compartment is inevitable in serious side impacts, but any intrusion that does occur should be uniform both horizontally and vertically and shouldn't seriously compromise the driver or passenger space.

**End 5-page news release on side impact crash test results
3-page attachment: side impact evaluations of midsize cars
VNR October 4, 2004 at 10-10:30 am EDT (C) IA 5/Trans. 19;
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For more information go to www.iihs.org

ATTACHMENT: CRASHWORTHINESS EVALUATIONS, PAGE 1 OF 3

Midsize luxury cars 4-door models		Side impact crash test performance					Frontal offset test	
		OVERALL SIDE EVALUATION	HEAD PROTECTION	INJURY MEASURES			STRUCTURE/ SAFETY CAGE	OVERALL FRONTAL EVALUATION
				Head/neck	Torso	Pelvis/leg		
NEWLY TESTED	ACURA TL TESTED WITH STANDARD SIDE AIRBAGS 2004-05 models; test vehicle = 3,554 lbs.	G	Driver G Rear passenger G	G G	A G	G G	A	G
NEWLY TESTED	LEXUS ES 330 TESTED WITH STANDARD SIDE AIRBAGS 2004 (mfg. after 4/2004)-05 models; avg. test vehicle = 3,487 lbs.	G	Driver G Rear passenger G	G G	A A	G G	A	G
NEWLY TESTED	MERCEDES C CLASS TESTED WITH STANDARD SIDE AIRBAGS 2005 models; test vehicle = 3,347 lbs.	A	Driver G Rear passenger G	G G	M G	G G	A	G
NEWLY TESTED	SAAB 9-5 TESTED WITH STANDARD SIDE AIRBAGS 1999-2005 models; test vehicle = 3,505 lbs.	A	Driver G Rear passenger M	G G	G G	A G	M	G
NEWLY TESTED	JAGUAR X-TYPE TESTED WITH STANDARD SIDE AIRBAGS 2002-05 models; test vehicle = 3,585 lbs.	M	Driver G Rear passenger G	G G	P G	A G	M	G
	LEXUS IS 300 2002-05 models test vehicle = 3,395 lbs.	design changes underway; test in 2005	Driver <input type="checkbox"/> Rear passenger <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G
	BMW 3 SERIES 2000 (mfg. after 11/1999)-05 models test vehicle = 3,347 lbs.	design changes underway; test in 2005	Driver <input type="checkbox"/> Rear passenger <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G
	VOLVO S60 2001-05 models test vehicle = 3,422 lbs.	design changes underway; test in 2005	Driver <input type="checkbox"/> Rear passenger <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G

G GOOD
A ACCEPTABLE
M MARGINAL
P POOR

NOTE: Order of vehicles reflects performance in side impact crash tests.

ATTACHMENT: CRASHWORTHINESS EVALUATIONS, PAGE 2 OF 3

Midsize moderately priced cars 4-door models	Side impact crash test performance					Frontal offset test	
	OVERALL SIDE EVALUATION	HEAD PROTECTION	INJURY MEASURES			STRUCTURE/ SAFETY CAGE	OVERALL FRONTAL EVALUATION
			Head/neck	Torso	Pelvis/leg		
<p>DOUBLE BEST PICK</p> <p>SAAB 9-3 TESTED WITH STANDARD SIDE AIRBAGS 2004 (mfg. after 12/2003)-05 models test vehicle = 3,236 lbs.</p> <p>NEWLY TESTED</p>	G	Driver G Rear passenger G	G G	G G	G G	A	G BEST PICK frontal
<p>NEWLY TESTED</p> <p>VOLVO S40 TESTED WITH STANDARD SIDE AIRBAGS 2005 models test vehicle = 3,245 lbs.</p>	A	Driver G Rear passenger G	G G	M G	G G	A	G BEST PICK frontal
<p>NISSAN MAXIMA 2004-05 models test vehicle = 3,472 lbs.</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal
<p>AUDI A4 2002 (mfg. after 2/2002)-05 models test vehicle = 3,569 lbs.</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal
<p>TOYOTA AVALON 2000-04 models test vehicle = 3,468 lbs. Note: 2004 Avalon is a current model through Dec. 2004</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal
<p>ACURA TSX 2004-05 models test vehicle = 3,278 lbs.</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal
<p>VOLKSWAGEN PASSAT 1998-2005 models test vehicle = 3,170 lbs.</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal
<p>INFINITI G35 2003-05 models test vehicle = 3,468 lbs.</p>	design changes underway; test in 2005	Driver Rear passenger	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	G BEST PICK frontal

G GOOD
A ACCEPTABLE
M MARGINAL
P POOR

NOTE: Order of vehicles reflects performance in side impact crash tests.

ATTACHMENT: CRASHWORTHINESS EVALUATIONS, PAGE 3 OF 3

Midsize inexpensive cars 4-door models	Side impact crash test performance						Frontal offset test
	OVERALL SIDE EVALUATION	HEAD PROTECTION	INJURY MEASURES			STRUCTURE/ SAFETY CAGE	OVERALL FRONTAL EVALUATION
			Head/neck	Torso	Pelvis/leg		
TOYOTA CAMRY TESTED WITH OPTIONAL SIDE AIRBAGS 2004-05 models; test vehicle = 3,203 lbs.	G	Driver G Rear passenger G	G G	G G	A G	A	G 
HONDA ACCORD TESTED WITH SIDE AIRBAGS (OPT. 2004, STD. 2005) 2004-05 models; test vehicle = 3,157 lbs.	G	Driver G Rear passenger G	G G	G G	G G	M	G 
NEWLY TESTED MITSUBISHI GALANT TESTED WITH STANDARD SIDE AIRBAGS 2005 models; test vehicle = 3,391 lbs.	G	Driver G Rear passenger M	G G	A G	G G	G	G
SUBARU LEGACY TESTED WITH STANDARD SIDE AIRBAGS 2005 models; test vehicle = 3,322 lbs.	M	Driver G Rear passenger G	G G	P G	M G	A	G 
HYUNDAI SONATA/KIA OPTIMA TESTED WITH STANDARD SIDE AIRBAGS Sonata 1999-05 models; test vehicle = 3,277 lbs. Optima 2001-05 models;	P	Driver G Rear passenger M	G G	P G	P G	P	A
NISSAN ALTIMA TESTED WITHOUT OPTIONAL SIDE AIRBAGS 2002-05 models; test vehicle = 3,095 lbs.	P	Driver P Rear passenger M	P A	A G	P G	P	G
CHEVROLET MALIBU TESTED WITHOUT OPTIONAL SIDE AIRBAGS 2004-05 models; test vehicle = 3,254 lbs.	P	Driver P Rear passenger M	P A	P G	M G	A	G
TOYOTA CAMRY TESTED WITHOUT OPTIONAL SIDE AIRBAGS 2002-05 models; test vehicle = 3,197 lbs.	P	Driver P Rear passenger M	P G	M P	G G	A	G 
DODGE STRATUS/CHRYSLER SEBRING TESTED WITHOUT OPTIONAL SIDE AIRBAGS 2001-05 models; test vehicle = 3,126 lbs.	P	Driver P Rear passenger M	A G	P M	P G	P	A
MAZDA 6 TESTED WITHOUT OPTIONAL SIDE AIRBAGS 2003-05 models; test vehicle = 3,137 lbs.	P	Driver P Rear passenger A	P G	M P	P G	P	G 
CHEVROLET MALIBU TO BE TESTED WITH OPTIONAL SIDE AIRBAGS 2005 models; test vehicle = 3,183 lbs.	<div style="border: 1px solid black; padding: 2px;">design changes underway; test in 2005</div>	Driver <input type="text"/> Rear passenger <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/>	G
SUZUKI VERONA TO BE TESTED WITH OPTIONAL SIDE AIRBAGS 2005 models test vehicle = 3,385 lbs.	<div style="border: 1px solid black; padding: 2px;">design changes underway; test in 2005</div>	Driver <input type="text"/> Rear passenger <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/>	A

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NOTE: Order of vehicles reflects performance in side impact crash tests.