

## Top Safety Pick for Volvo C30



## INSURANCE INSTITUTE FOR HIGHWAY SAFETY

### Crash Tests of 2-Door Cars: Volvo & Ford Coupes Earn Top Safety Pick All 5 Cars Tested Are Rated Good or Acceptable In Demanding Side Test

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**Arlington, VA** — Crash tests demonstrate that occupant protection in all kinds of vehicles is improving. However, the Insurance Institute for Highway Safety doesn't routinely test vehicles in every size/type category. Emphasizing vehicles for family use, the Institute usually crash tests 4-door models. To evaluate the extent to which automakers are extending crashworthiness improvements to 2-door cars, the Institute recently conducted front, side, and rear tests of 2009 coupes including the Chevrolet Cobalt, Ford Focus, Honda Civic, and Scion tC, all small models, plus the midsize Volvo C30.

"We're often asked about the crash test performance of 2-door cars," says David Zuby, Institute senior vice president for vehicle research. "Design and structural differences mean we can't automatically apply our test results of 4-door cars to 2-door versions of the same models. We decided to do these tests to see how the 2-doors stack up in protecting people in the 3 most common kinds of crashes." The Institute rates vehicles good, acceptable, marginal, or poor based on performance in front and side crash tests. The third test measures how well vehicle seats and head restraints protect people against neck injury in low-speed rear crashes.



"Overall the results for 2-door cars are good news," Zuby says. "All but one earn good ratings in our frontal offset test. Only 2 of the 5 earn this rating for protection in side crashes, but none of the 5 earns anything less than an acceptable rating. This is pretty good, considering how demanding the side test is. It simulates being struck by a pickup or SUV."

Zuby adds that "all 5 cars in this group, from relatively inexpensive to moderately priced, have head-protecting side airbags as standard equipment. In 2003 automakers pledged to voluntarily put side airbags in their vehicles as standard equipment by the 2010 model year. They're making good on this pledge."

### Focus and C30 are best in group of 5

Earning good ratings in all 3 of the Institute's tests and equipped with optional electronic stability control, the Focus qualifies as a 2009 TOP SAFETY PICK among small cars. Also earning this award is the midsize Volvo C30. Seven small cars and 10 midsize moderately priced models now earn the award, the Institute's top safety designation. The list of winners makes it easier for consumers to zero in on vehicles in each class that afford the best overall crash protection.

"Choosing a vehicle that provides top-notch crash protection is easier than ever," Zuby says. "With so

many choices, there's no reason to buy something with less than the best crash test ratings."

Among the 5 car models the Institute recently tested, 4 earn the top rating of good in the 40 mph frontal offset test. The Scion tC is rated acceptable. The tC's structure held up well, but overall performance wasn't as good as the other cars. Forces recorded on the driver dummy indicate that an injury to the lower right leg would be possible, and a high head acceleration occurred when the dummy's head bottomed out the airbag. The tC is unique in this group for having a separate airbag in the lower instrument panel designed to minimize knee injuries in frontal crashes. The tC doesn't have electronic stability control, which research shows can significantly reduce the risk of crashing — especially getting into a serious single vehicle crash. This feature reduces fatal single-vehicle crash risk by 51 percent and fatal multiple-vehicle crash risk by 20 percent.

"Since the tC is especially appealing to younger drivers who are more likely to get into the kinds of situations where electronic stability control can make a difference, even a lifesaving difference, it's disappointing that this feature isn't offered, even as an option," Zubay points out.

### **No poor performers in side test**

Side impacts are the second most common type of fatal crash. More than 8,000 people were killed in side impacts in 2007. This compares with more than 14,000 deaths in frontal crashes. In the Institute's side test, the C30 and Focus are rated good. The Civic, Cobalt, and tC are rated acceptable (note: The Cobalt's rating applies to vehicles built after May 2009, when General Motors modified this car's curtain airbags). In the Civic, forces on the driver dummy's chest and abdomen indicate that rib fractures and a fractured pelvis would be possible. The tC also was downgraded for torso protection. The Cobalt's marginal score for structural intrusion into the occupant compartment prevented this car from earning a good rating overall in the side test.

### **Rear crash protection**

Occupant protection in rear-enders has mostly lagged behind improvements in front and side crashworthiness, but the recently tested cars are exceptions. All but the tC earn good or acceptable rear crash ratings. Neck sprain or strain is the most frequently reported crash injury in US insurance claims. As automakers strive to earn TOP SAFETY PICK, they're upgrading seats and head restraints.

### **2- and 4-door cars don't always perform the same**

The Civic, Cobalt, and Focus also are sold as 4-doors, and the Institute tested them previously. Frontal tests reveal only small differences between the 2- and 4-door versions, but differences in side test performance are more pronounced. For example, the 4-door Civic earns a good rating in the Institute's side test and is a TOP SAFETY PICK while the 2-door version is rated acceptable in the side test because of higher forces on the driver dummy's chest, abdomen, and pelvis. On the other hand, the 2-door Focus performed better than the 4-door version, earning a good rating in the side test and a TOP SAFETY PICK designation compared with the 4-door's acceptable performance in the side test.

"These differences confirm that crash test ratings for 4-door cars can't automatically be applied to 2-door versions," Zubay explains. "Still the safety improvements we've seen for 4-door vehicles generally appear to be carrying over to 2-doors, which is good news for consumers."

### **How vehicles are evaluated**

The Institute's frontal crashworthiness evaluations are based on results of 40 mph frontal offset crash tests. Each vehicle's overall evaluation is based on measurements of intrusion into the occupant compartment, injury measures recorded on a Hybrid III dummy in the driver seat, and analysis of slow-motion film to assess how well the restraint system controlled dummy movement during the test. Side evaluations are based on performance in a crash test in which the side of a vehicle is struck by a barrier moving at 31 mph. The barrier represents the front end of a pickup or SUV. Ratings reflect injury measures recorded on two instrumented SID-II dummies, assessment of head protection

countermeasures, and the vehicle's structural performance during the impact.

Rear crash protection is rated according to a two-step procedure. Starting points for the ratings are measurements of head restraint geometry — the height of a restraint and its horizontal distance behind the back of the head of an average-size man. Seat/head restraints with good or acceptable geometry are tested dynamically using a dummy that measures forces on the neck. This test simulates a collision in which a stationary vehicle is struck in the rear at 20 mph. Seats without good or acceptable geometry are rated poor overall because they can't be positioned to protect many people.

View the [IIHS Safety Test Results](#).

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