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VNR: Thurs. 7/30/2015, 10:30-11 a.m. EDT; repeat 1:30-2 p.m. EDT (KU) GALAXY 17
SD transponder 21/slot 4 (dl12123H) bandwidth 6 MHz; symbol rate 3.9787 FEC $\frac{3}{4}$
HD transponder 20/slot lower (dl12091V) bandwidth 18 MHz; symbol rate 13.235 FEC $\frac{3}{4}$

Ford F-150 crew cab pickup aces IIHS evaluations, but extended cab struggles in key small overlap test

ARLINGTON, Va. — The aluminum-body 2015 Ford F-150 crew cab swept the Insurance Institute for Highway Safety's full slate of crashworthiness evaluations to qualify for a 2015 *TOP SAFETY PICK* award. The F-150 extended cab turned in a good performance in 4 of 5 assessments but stumbled in the small overlap front test. The results are the first ratings for large pickups in a group the Institute is evaluating this year.

The F-150 crew cab, which Ford calls the SuperCrew, earns good ratings for occupant protection in all five IIHS crashworthiness evaluations — small overlap front, moderate overlap front, side, roof strength and head restraint evaluations. The extended cab, or SuperCab, earns good ratings in the moderate overlap front, side, roof strength and head restraint evaluations but just a marginal rating for occupant protection in a small overlap front crash.

The Institute picked the F-150 to test first because it is not only the best-selling vehicle in the U.S. but also the first mass-market vehicle with an all-aluminum body.

"Consumers who wondered whether the aluminum-body F-150 would be as crashworthy as its steel-body predecessor can consider the question answered," says David Zuby, IIHS chief research officer.

Both the crew cab and extended cab F-150 pickups are rated basic for front crash prevention when equipped with Ford's optional forward collision warning system, which meets performance criteria set by the National Highway Traffic Safety Administration (NHTSA). The F-150 crew cab isn't eligible for *TOP SAFETY PICK+* because it lacks an autonomous braking system.

Vehicles that earn a good or acceptable rating for small overlap protection and good ratings in the moderate overlap front, side, roof strength and head restraint evaluations qualify for *TOP SAFETY PICK*. To earn *TOP SAFETY PICK+*, vehicles also must have an available autobrake system that earns an advanced or superior rating.

Why two models were evaluated

For vehicles with multiple body styles, the Institute typically evaluates the one with the biggest sales. Initially, only the F-150 crew cab was on the schedule.

"After we tested the crew cab in the spring, questions were raised about the extended cab's ability to match the crew cab's good small overlap performance. We did some initial analysis and decided to test the extended cab, too," Zuby says.

While a departure from the Institute's usual practice, the F-150 merits a closer look.

“For starters, there’s been lots of buzz around the release of the first aluminum-body pickup and how it would perform in crash tests,” Zuby says. “What’s more, even the lower-selling extended cab sales top those of many of the passenger vehicles we rate.”

To provide consumers with more safety information, IIHS plans to rate multiple variants of the other pickups slated for tests this year.

Striking differences in small overlap test

In the small overlap front test, each F-150 traveled at 40 mph toward a 5-foot-tall rigid barrier. Twenty-five percent of the pickup’s total width struck the barrier on the driver side, where a Hybrid III dummy representing an average-size



man was positioned at the steering wheel. The test replicates what happens when the front corner of a vehicle collides with another vehicle or an object such as a tree or a utility pole.

The two versions of the F-150 had markedly different outcomes.

“In a small overlap front crash like this, there’s no question you’d rather be driving the crew cab than the extended cab F-150,” Zuby says.

The crew cab’s occupant compartment remained intact. The front-end structure crumpled in a way that spared the occupant compartment significant intrusion and preserved survival space for the driver.

Measures recorded on the test dummy indicated low risk of injuries to the dummy’s head, chest, legs and feet. The front and side curtain airbags worked together to keep the dummy’s head from contacting injury-producing stiff interior structures or outside objects. The dummy’s head loaded the front airbag, which stayed in place until the dummy rebounded.



The extended cab is a different story. Intruding structure seriously compromised the driver’s survival space, resulting in a poor structural rating. The toepan, parking brake and brake pedal were pushed back 10-13 inches toward the dummy, and the dashboard was jammed against its lower legs. Measures recorded on the dummy indicated there would be a moderate risk of injuries to the right thigh, lower left leg and left foot in a real-world crash of this severity.

The steering column was pushed back nearly 8 inches and came dangerously close to the dummy’s chest. The dummy’s head barely contacted the front airbag before sliding off to the left and hitting the instrument panel.

“Ford added structural elements to the crew cab’s front frame to earn a good small overlap rating and a *TOP SAFETY PICK* award but didn’t do the same for the extended cab,” Zuby observes. “That shortchanges buyers who might pick the extended cab thinking it offers the same protection in this type of crash as the crew cab. It doesn’t.”

The Institute has briefed Ford on the results. In a statement, the manufacturer said, “Ford is evaluating possible changes to the extended cab for small offset performance.”

The crew cab’s occupant compartment (top) resisted intrusion in the small overlap front test. The safety cage is largely intact. In the test of the extended cab (bottom), there was significant intrusion. The steering wheel is close to the dummy’s chest, and the dummy’s legs are jammed against the instrument panel.

Moderate overlap, side and roof tests

The Institute assigned the crew cab and extended crew models good ratings for occupant protection in a moderate overlap front crash based on test data shared by Ford for both cab styles as part of the Institute's front crash-test verification process. The F-150 qualifies for the program because the earlier-generation models were rated good in this test.

In the side impact test for both models, measures taken from both the driver dummy and the passenger dummy seated in the rear seat indicated low risk of significant injuries in a real-world crash like this one. The side curtain airbag deployed from the roof to protect the dummies' heads from hitting any hard structures, including the intruding 3,300-pound SUV-like test barrier striking the driver side at 31 mph.

The crew cab's roof withstood a force of nearly 6 times the pickup's weight and the extended cab's roof withstood a force of 5.3 times the pickup's weight, an indication that the roofs will help protect occupants in rollover crashes.

The IIHS ratings apply to the 2015 SuperCrew F-150 and the SuperCab F-150 only. The Institute hasn't evaluated the 2015 regular cab.

Pricier repairs for aluminum F-150 in low-speed crashes

Since the F-150 is a unique vehicle with its aluminum body, the Institute also looked at repair costs for the 2015 model. Damage to aluminum body parts can be more complicated and pricier to repair than steel, analyses by the Highway Loss Data Institute have shown.

The Institute ran crash tests at 10 mph with the new F-150 crew cab and its 2014 steel-bodied predecessor. Engineers crashed the front left corner of the aluminum pickup into the right rear corner of the steel pickup at a 15 percent overlap, and then flipped the test and ran the steel pickup into the back of the aluminum one.

In both test scenarios, the aluminum F-150 had more extensive damage than the steel model. Total repair costs for the front and rear damage combined were 26 percent higher for the aluminum F-150. Extra time to repair the aluminum body accounted for the higher price to fix frontal damage, while higher parts costs pushed up the repair bill for the rear damage.

"From a simple bolt-on parts replacement to a more-involved removal and installation of entire body panels, fixing the aluminum F-150 is more expensive than repairing a steel-body F-150," Zuby says.

The IIHS fender-bender tests show the potential implications for out-of-pocket costs as well as insurance premiums when consumers opt for vehicles built with more aluminum.

For more information, go to iihs.org

The Insurance Institute for Highway Safety is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from crashes on the nation's roads. The Institute is wholly supported by auto insurers.