

Special issue: cosmetic repair parts

# STATUS REPORT

INSURANCE INSTITUTE  
FOR HIGHWAY SAFETY

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## Cosmetic repair parts irrelevant to safety

If car crashworthiness isn't influenced by whether or not a vehicle's cosmetic crash parts are on the car or removed, then it follows that the source of the parts also is irrelevant to crashworthiness. This is demonstrated in a new test of a Toyota Camry from which the front-end cosmetic parts were removed.

Before detailing the crash test, here's a little background: A car's cosmetic repair parts (often called crash parts) include fenders, door skins, bumper covers, and the like. In the continuing debate about whether such parts from aftermarket suppliers

are as good as cosmetic parts from original-equipment manufacturers, the issue of safety keeps cropping up (see *Status Report*, Nov. 21, 1987). Claims are made that using cosmetic crash parts from sources other than original-equipment manufacturers could compromise safety. But the fact is, the source of the parts is irrelevant to safety because the parts themselves, except possibly the hood, serve no safety or structural function. They merely cover a car like a skin.

“The safety claims are red herrings to try to frighten people. With the possible exception of hoods, there are no safety implications of using cosmetic crash parts from any source,” Institute president Brian O’Neill says. Car hoods can affect occupant safety in a crash or even without a crash (see p. 5). But there’s no evidence that hoods from aftermarket suppliers fail to perform as well as original-equipment hoods.

To again demonstrate the irrelevance of safety in the cosmetic crash parts debate — such demonstrations have been conducted before (see p. 4) — the Institute recently tested a 1997 Toyota Camry from which the front fenders, door skins, and front bumper cover were removed. The original-equipment hood was replaced with a certified hood from an aftermarket supplier. The test results then were compared with results involving a 1997 Camry with its original-equipment parts intact.

Both Camrys performed with distinction in 40 mph frontal offset impacts. Both earned good crashworthiness ratings according to the Institute’s evaluation procedures. This means a Camry that doesn’t have any of its front-end cosmetic parts is rated better than most competing midsize cars that still have such parts.

Detailed results of the performances of the Camrys in the offset tests were similar. During each test, researchers recorded measures on the driver dummy to assess the likelihood that people in on-the-road crashes would be injured. These measures were similar. The dummy in the Camry without its cosmetic parts recorded slightly lower results for leg injuries, but the differences were well within the expected range of test-to-test variability.

After each test, researchers also measured intrusion into the occupant compartment. There was slightly more intrusion in the footwell of the Camry without its cosmetic parts (again, the differences were within the range of test-to-test variability), while measurements of instrument panel and A-pillar movement were almost identical.

Control of the crash test dummies and measured steering column movement also were similar. In each test, the dummy’s head hit the B-pillar during rebound. Head acceleration from this impact in the Camry without its cosmetic parts was lower.



**Crashworthiness Evaluations,  
1997 Toyota Camrys**

	with cosmetic parts	without cosmetic parts
<b>Overall Evaluation</b>	G	G
Structure	G	G
Restraints/ Dummy Movement	G	G
Injury measures:		
Head/neck	A	G
Chest	G	G
Left leg/foot	G	G
Right leg/foot	G	G

For complete evaluations of the Camry and other midsize cars, visit [www.highwaysafety.org](http://www.highwaysafety.org)

G: good  
A: acceptable  
M: marginal  
P: poor

Both the original-equipment and aftermarket hoods performed well, buckling as they’re designed to do. Neither one was pushed back anywhere near the windshield, so front-seat occupants in real crashes similar to these tests wouldn’t be endangered.

“There essentially was no difference in crashworthiness performance. Both Camrys were rated good. The cosmetic parts didn’t (continues on p.6)

	Injury measures		
	Head HIC	Peak gs from hard contact	Chest Maximum compression (mm)
<b>1997 Toyota Camry</b> with original-equipment cosmetic crash parts	470	127	36
<b>1997 Toyota Camry</b> without cosmetic crash parts	582	40	37

# Injecting safety into the continuing debate about cosmetic crash parts

Even though safety is irrelevant to the debate about original-equipment versus aftermarket cosmetic crash parts, numerous attempts have been made to inject safety into the controversy. For example:

In a 1999 article entitled "Shoddy Auto Parts," *Consumer Reports* conceded there are "little data on the safety of replacement parts." Without any objective evidence of safety problems, *Consumer Reports* relied on anecdotal evidence, of which the article says "there is enough . . . to raise concern." Yet no convincing evidence was offered.

During consideration of legislation on aftermarket crash parts, a 1999 report from the Florida House of Representatives cited *Consumer Reports* extensively as well as the views of automakers. A Ford representative, for example, is quoted as saying "no testing has been conducted to verify that the performance of imitation crash parts . . . in front-end crashes will be compatible with Ford airbag systems . . . Because so little is known about the effect of imitation parts on an airbag system and component integrity, Ford believes genuine Ford crash parts should be used."

This statement was issued despite one from Ford's vice president for environmental and safety engineering, Helen Petruskas, in 1987. She told Institute president Brian O'Neill that "after a review of the information you provided, as well as other data available to us, we have concluded that, in general, fenders and door 'skins' are components whose design or manufacture is not likely to have a significant effect on vehicle safety."

Still, some car company representatives continue to raise the safety issue. For example, a 1997 General Motors statement said "any deviation in the use of parts not specifically designed to meet the original specifications can compromise the integral balance between the safety systems."

According to a bill introduced last year (but not enacted) in the New York legislature, "the use of genuine crash parts (parts manufactured by or for the company that manufactured the vehicle itself) should be required to assure quality, safe repairs. Studies have shown that some alternative parts create unnecessary safety risks due to improper fitting." However, neither the studies nor details of their findings were specified.

Responsible studies linking aftermarket parts to safety compromises don't exist. And, as *Consumer Reports* conceded, the National Highway Traffic Safety Administration "hasn't been getting complaints about the safety of replacement parts." In fact, the agency responded to a query from U.S. Congressman John Dingell in 1991, noting that "there are no data or analyses available at this time to suggest a safety problem with aftermarket or replacement components." There still aren't.



Peak gs, 3 ms clip	Maximum tibia index		Steering column movement		Measures of occupant compartment intrusion						
	Left	Right	Upward (cm)	Rearward (cm)	A-pillar movement	Instrument panel rear movement		Footwell intrusion			Footrest (cm)
					Rearward (cm)	Left (cm)	Right (cm)	Left (cm)	Center (cm)	Right (cm)	
39	0.57	0.68	5	2	2	3	3	11	12	11	4
36	0.48	0.60	3	4	2	3	3	16	18	13	9

## Two crash tests, one 13 years old, show irrelevance of safety to crash parts debate

The recent crash test of a 1997 Toyota Camry into a deformable barrier at 40 mph (see p. 1) isn't the first time the Institute has used tests to show the irrelevance of safety to the cosmetic repair parts debate. When this controversy heated up in the 1980s, the safety-related claim of the moment was that cars repaired with cosmetic parts from aftermarket suppliers might not comply with federal motor vehicle safety standards.

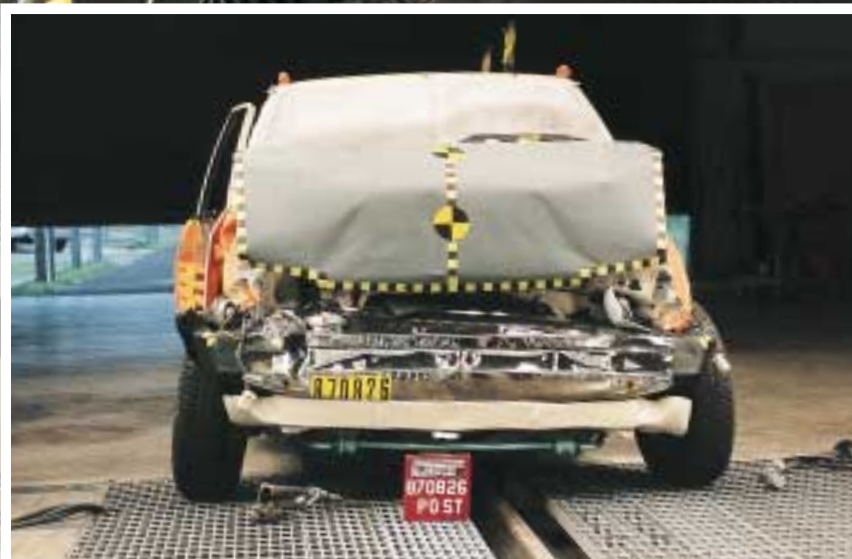
The Institute entered this dialogue in 1987, saying "there's no reason to believe — let alone assume — that cosmetic crash parts significantly influence car crashworthiness." To reinforce this conclusion, Institute researchers demonstrated the point in a crash test.

**Ford Escort test:** A 1987 Ford Escort was crashed into a rigid barrier at 30 mph to measure compliance with the federal motor vehicle safety standards that specified crash test requirements at the time. Like the Camry, the Escort was crashed without its front fenders, door skins, or grille. The original-equipment hood was replaced with an aftermarket part to measure compliance with federal requirements, according to which the hood must not intrude into the windshield or a defined zone around it in a 30 mph crash.

And the result? The Escort complied with all front-into-barrier crash test performance requirements specified in five separate federal standards. It met these requirements with room to spare. There was no appreciable movement of the steering column. Head injury measures for driver and passenger dummies were far below the threshold used to indicate injury likelihood. Chest and upper leg injury measures also were low. Windshield retention was 100 percent. The hood buckled and didn't intrude into the protected zone. Fuel spillage was zero.

**Vauxhall Astra test:** The Institute isn't the only research group to conduct such a test. In 1995, England's Motor Insurance Repair Research Centre tested a 1995 Vauxhall Astra from which the fenders and door skins had been removed and the hood replaced with an aftermarket part.

The result of this front-into-rigid-barrier impact at 30 mph was similar to the Escort test. That is, the Astra complied with the same U.S. safety standards. According to the Astra's certification report, "comparison of the test vehicle with a previously tested vehicle of identical type tested to the same standard indicated that the presence of 'non-indigenous' panels had little effect on failure mode, as did the absence of the front outer wing panels and doorskins."



1987 Ford Escort  
30 mph federal compliance crash test



## Unlike other cosmetic crash parts used in auto repairs, the hoods of cars could influence safety

The hood is the single cosmetic part that could be a source of safety problems. There are two possible concerns.

**In the absence of a crash:** The first possible concern has nothing to do with performance in a crash. It has to do with whether a hood latch or attachment points could fail while driving and allow the hood to fly up suddenly, obscuring the driver's view. *Consumer Reports* has cited an unverified claim that an aftermarket hood failed in this manner and caused a crash.

A notable absence from the same article is acknowledgement that hoods from original-equipment manufacturers can, and do, have defective latches and/or attachment points that fail in the same manner. Auto manufacturers have conducted 47 safety-related recalls involving original-equipment hoods, mostly because of hood latches and attachment hardware. A total of 6,216,946 vehicles have been recalled. Many cases have involved hoods that flew up, causing some reported crashes.

"Such a large number of safety-related recalls of original-equipment hoods lends perspective to the unsubstantiated allegation in *Consumer Reports* that aftermarket hoods are somehow inferior," Institute president Brian O'Neill notes.

The quality of many aftermarket crash parts used for auto repairs, including car hoods, is evaluated by the Certified Automotive Parts Association (CAPA). "All hood latches and strikers are subject to additional testing," CAPA says, "to evaluate their dimensions, retention, and hardness of core and case." Other than hoods, the parts CAPA certifies aren't safety related. This group doesn't certify parts that are subject to the requirements of federal motor vehicle safety standards.

**Crash performance:** The second possible concern relates to hood performance in crashes — whether they will buckle, as new-car hoods are designed to do, so a hood doesn't get driven back near the windshield. CAPA certifies hoods by ensuring that the same buckle points present in hoods from car companies also are present in the aftermarket hoods it approves.

"Hoods must buckle as they're supposed to, or else safety could be compromised," O'Neill says. "It's obviously not feasible to crash test every aftermarket hood. But in several tests in which original-equipment hoods have been replaced by aftermarket ones, the replacement hoods have performed exactly as they should. This is to be expected because the buckle points are built in."

(continued from p.2) influence the results,” O’Neill points out. “Only three other midsize four-door cars we’ve tested match the Camrys’ crashworthiness ratings. In contrast, 10 cars in this class are rated acceptable, 2 are marginal, and 11 are poor. So a Camry without cosmetic parts offers more protection in a serious frontal crash than many competing cars with all cosmetic parts supplied by the original-equipment manufacturers.”



These photos, taken after the 40 mph offset crash test, show how well the driver space was maintained in both Camrys. The space was maintained regardless of the presence (top photo) or absence (above) of cosmetic crash parts.



## Real issue about cosmetic parts is cost of original-equipment parts, not safety of aftermarket parts

There's no merit to the safety questions that have been raised about cosmetic auto crash parts from aftermarket suppliers. But there's a very big pocketbook issue associated with using repair parts from original-equipment suppliers — they cost a lot more than the aftermarket parts.

The Alliance of American Insurers recently toted up the cost of rebuilding a 1999 Toyota Camry with parts supplied by the car company. The tab came to

\$101,355.55, compared with the Camry's sticker price of about \$23,000. And the cost of the rebuilt car could have been even higher except for markdowns because of competition from aftermarket suppliers. The Alliance's Kirk Hansen, director of claims, points out that "if the aftermarket parts didn't exist, the price of the Camry would be closer to \$200,000."

To demonstrate just how the introduction of aftermarket parts influences the



**SALE  
PRICE**  
\$101,355.55

**SALE  
PRICE**

**1992 Toyota Camry  
Fender price comparisons**

	<b>Original- equipment</b>	<b>After- market</b>
1992	\$253	none
1993	264	\$202
1994	265	209
1995	259	168
1996	143	60
1997	143	63
1998	143	77
1999	146	56

price of cosmetic parts supplied by the car companies, the Alliance points to a study involving Toyota Camry parts prices. This automaker priced a fender at \$253. In comparison, an aftermarket fender fitting the same car was introduced the next year at \$202. As the price of the aftermarket part came down during the following years, Toyota lowered its price to \$143.

“Opponents of using aftermarket cosmetic parts would like consumers to believe ominous safety consequences will follow from using anything other than original-equipment parts,” Hansen says. “But the truth is that the ominous consequences come from using the original-equipment parts, which hit both car owners and their insurers in the pocketbook.”

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This special issue focuses on the safety of cosmetic repair parts from competing suppliers. Recent special issues have focused on the following subjects:

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Neck injuries	34:5 (1999)
Vehicle safety advancements	34:4 (1999)
Pedestrian deaths, injuries	34:3 (1999)
Truck safety	33:8 (1998)
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Crash compatibility	33:1 (1998)
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