

# Why Did Car's Wheel Break Off?

BY TOM AND RAY  
MAGLIOZZI

Dear Tom and Ray:  
Two weeks ago while traveling down a city street, my car, a Volvo S80, suddenly swerved and almost flew into a lamppost. A man driving behind me said he saw the right front wheel come off just before the car swerved. If he had not seen the wheel fall off, I would not have known what had happened. My insurance has covered everything, as the car was a total loss, but neither the insurance company nor the Volvo shop where it was towed could give any explanation for this accident. Fortunately, no one was on the sidewalk or in the street to

be hit by the wheel. Nonetheless, I am very disturbed not to know what caused this. Have you any ideas or explanations? Thank you. – Judy

RAY: I can't say for sure what happened, Judy, but my guess would have to be that your wheel bolts broke off.

TOM: Volvo uses wheel bolts instead of lug nuts to hold the wheels on. On most cars, if you take a wheel off, the wheel bolts are sticking out at you. They're permanently attached to the wheel hubs.

RAY: But on Volvos (and Volkswagens and Audis), you have to stick the bolts IN through the wheel. So you hold the wheel in place, stick each bolt through a



Click & Clack

hole in the wheel and then thread it right into the hub. And in our experience working on Volvos, we've occasionally broken a wheel bolt when tightening it up.

TOM: Why did it break? We don't know. A manufacturing defect? Age? I would say that most likely, the

cause is previous overtightening. If a shop isn't careful to measure its torque, it easily can overtighten a bolt, which stretches it, and that causes the metal to fatigue and weaken. And the more times you overtighten it – putting it on and taking it off – the weaker the metal gets.

RAY: Whenever we have more than one wheel bolt break on a car, we replace all 20 of them. We don't even give the customer a choice. We figure if two of them were overtightened and are ready to break, they probably all were overtightened and are ready to break.

TOM: And in your situation, you might have had one that broke without your knowing it. Then you had four doing the job of five.

RAY: That increased the stress on the remaining four, and soon another one gave way. Then you had three doing the job of five.

TOM: And you never would notice this until the last bolt or two can't hold on anymore, and the wheel falls off.

RAY: This is something that you hope your regular repair shop would catch in advance when it does

things like inspect your brakes and rotate your tires. But that didn't happen in your case. Maybe your shop doesn't subscribe to our bolt-replacement theory? Maybe you haven't been in for service regularly enough? Maybe they're the ones doing the overtightening? Or maybe it was just bad luck and the whole episode took place between service visits?

TOM: In any case, that's our guess as to what happened. And we're just glad you didn't get hurt.

RAY: I know if that had happened to me, I would have had to ask my insurance company to cover my dry-cleaning bill, too!

**Got a question about cars? Write to Click and Clack in care of this newspaper, or e-mail them by visiting the Car Talk Web site at [www.cartalk.com](http://www.cartalk.com).**

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