

Ralph's Crash Reconstruction Newsletter: Volume 16, Number 4—Autumn 2017

Tires. We all ride on them. I had written about them in my previous newsletter. I had also written about the Alfa Romeo Giulia, a vehicle on which almost every enthusiast magazine has lavished the highest praise. (Even an issue of *Guitar Aficionado* had a feature article on that car.) In the June 2017 issue of *Car and Driver* magazine, many readers sent letters to the editors. Many apparently had problems with their Alfas in the past. (I didn't with the ones I had.) But one letter initiated a test: one reader had written to complain that comparison testing was done with Pirelli P Zero Corsa tires on the Alfa, while the rest of the tested cars were equipped with Michelin Pilot Super Sport tires. The editors investigated and found that those Michelin tires were not available in the staggered sizes for the Giulia, so they equipped their tested Alfa with Continental Extreme Contact Sport tires, which were reported to them to be the closest performance match to the Michelin Pilot Super Sport tires, and they conducted the same performance tests with the Continental tires on the Giulia as they had with the factory-standard Pirelli tires. I found the results interesting: the Pirellis performed better in every listed parameter, but usually only slightly; I was surprised at the difference in stopping distance from 70 mph—143 feet with the Pirellis, 156 feet with the Continentals. So, yes, tires do make a difference—on exotic machinery. Unless you own a car in that category, you generally won't notice a performance difference from one tire to another, unless you live in a region where you have to drive in snow/sleet/ice in the winter, in which case you need winter tires in the winter and summer tires in the summer, and failure to change to tires appropriate for the season may cause serious differences in performance.

Red-light runners. I usually see at least one every day I go out, which is almost every day of the year. Intersection collisions involving red-light runners often involve severe personal injury or death, because the red-light runners are typically traveling well above the speed limit on the intersecting street.

A little background on signal timing: yellow signals indicate that a red light is coming; yellow signals have different legal meanings in different states. In Georgia, yellow lights mean stop if you can (to reduce the legal mumbo-jumbo to everyday terms). After the yellow signal comes the red light, but it is red for all directions, at least in all jurisdictions of which I am aware. In Georgia, a driver who wants to turn left but cannot make that left turn because of oncoming traffic may enter the intersection on green, then turn when the oncoming traffic stops for a yellow or red traffic signal; once the left-turn driver has entered the intersection on green, it's his intersection until he has completed his turn. The purpose of having red signals in all directions for a brief period is to provide a time for left-turning drivers who have entered the intersection on green to clear the intersection after oncoming traffic stops for a yellow or red light. In the region where I drive, where there are very few high-speed, signal-controlled intersections and very few intersections where two multi-lane, two-way roads intersect, a yellow light lasts about 5 seconds, and the red light in all directions (called red clear, or red clearance, or all red) lasts about 3 seconds. At some intersections with high speed limits on approaches or with wide expanses of pavement to cross to clear the intersection, the times for yellow and red clear will probably be longer. My point in describing those timing details is to tell you this: if you are sitting at a red light at an

intersection waiting for a green turn arrow or a circular green so that you can proceed and a vehicle runs through the intersection after your signal turns green, realize that the yellow signal for that driver appeared at least **eight seconds** earlier. Where the speed limit is 35 mph, a vehicle traveling at that speed covers 410.7 feet in eight seconds. Regardless of the speed limit, eight seconds is eight seconds. A car which is not overloaded which has non-ABS brakes in good condition can stop in 234 feet from 70 mph on dry, level asphalt pavement, taking 4.6 seconds to skid to that stop. But if that car doesn't stop and hits a car or light truck broadside in the cabin region, it is likely that at least one person will die in the struck vehicle, because someone else refused to give the proper right of way at an intersection despite having been given eight or more seconds of notice. Even if such a driver passes through the intersection on red clear (i.e., five to eight seconds after the yellow light appeared), no collision will occur as long as no crossing traffic enters on red, because that red-light runner will clear the intersection before crossing traffic gets a green light. Please remember these details the next time someone blows through an intersection after your light turns green, and I certainly hope that driver doesn't nail you broadside. I see police officers and deputy sheriffs issuing speeding tickets and other traffic citations with some frequency—yes, we need them to patrol the streets and highways or there will be anarchy. But, so far, I have never seen one in this county sitting at an intersection watching for red-light runners; I feel that, in general, red-light runners are much more dangerous than speeding drivers. Plus, intersection collisions typically tie up traffic on both roads for a substantial time period.



Some jurisdictions favor red-light cameras. There are no red-light cameras in the county where I live. Red-light cameras are not a two-sided coin; they are a crap shoot, in my opinion. Those who favor red-light cameras cite statistics purporting to show that red-light-running crashes at camera-monitored intersections decreased after the cameras were installed; opponents cite statistics to show that rear-end collisions have increased at those intersections. Since the cameras are often installed by outside contractors who get to keep a percentage of the collected fines, some have been found to be issuing citations unjustly. (Imagine that!) Then there is the Constitutional right of American citizens to face their accuser in criminal proceedings. Who is the accuser when a camera has taken a photo of someone allegedly running a red light? How can a motorist face such an accuser? The framers of our Constitution could never have imagined something as sinister as red-light cameras and the opportunities they provide for corruption of suppliers and government agencies.

As always, driving becomes an exercise in driver awareness and caution. In today's world when everyone owns at least one car and seems never to stop driving it, and some of them don't stop for stop signs or red traffic signals or otherwise yield the right of way when they should, driving becomes increasingly challenging. When I was in college, I could drive for hours and maybe see 50 cars (not in Atlanta, but in regions where population density wasn't high.) Now, there are times when it seems I can't avoid seeing 50 cars a minute, and I don't know which one of

Ralph's Crash Reconstruction Newsletter

Volume 16, Number 4—Page 2

those drivers is drunk or texting or watching a movie or is otherwise distracted while driving.

I recently had an interesting case. A driver had a vehicle which had some unknown braking system problem or problems that were causing the anti-lock braking system (ABS) light to show when the car was in motion. This driver rear-ended a vehicle which had stopped ahead, then claimed that the brakes had not functioned properly, causing a failure to decelerate. I began my investigation at the airbag control module (ACM). This ACM recorded pre-crash data for five one-half second intervals before algorithm enable (AE). AE is the instant in time when motion of the vehicle causes the computer in the ACM to begin evaluating acceleration/deceleration in order to determine if airbag deployment is warranted. AE typically occurs within a few milliseconds (one millisecond is one one-thousandth of a second) of the beginning of a crash pulse; i.e., for all practical purposes, it is the instant that impact begins. Data extracted from the ACM revealed that the brake pedal had not been applied for any of the five one-half-second pre-crash intervals, including the last one at one-half second (nominal) before AE. This was also consistent with the reported small increase in speed from minus one second to minus one-half second, although the throttle pedal had been released between minus one second and minus one-half second. Please consider this when you have a vehicle with an ACM with event data recorder (EDR) capability which has rear-ended another vehicle or struck some other object and the driver of the impacting vehicle claims a brake failure.

Years ago, I was involved in a case where a man claimed he fell asleep and, as a result, he drifted off the road and hit a tree, totaling his car. He also claimed that he had a friend riding with him at the time of the crash, and the friend had some legitimate medical bills. But data imaging revealed that the car in question had increased in speed from minus five seconds to AE while the throttle pedal was not applied and the engine was idling. The Crash Data Retrieval Report did not reveal what vehicle had been used to push that crashed car. ☺

About ABS: when the ABS system fails to provide anti-lock braking function but there is no problem with the hydraulics or foundation brakes, the brakes will then function like a car with conventional (non-ABS) brakes. In other words, instead of attempting to maintain the tires at impending lock-up during hard braking, they will lock and skid like vehicles did before ABS. There are several advantages to the ABS: stopping distances are shorter for almost all situations, hard deceleration results in straight-line braking in the absence of an off-center steering condition, and steering is possible during hard braking when the tires are operating at or near impending lockup. A properly functioning ABS can be a tremendous asset in most driving situations, but failure of the ABS which is not related to problems with the hydraulics or foundation brakes will not cause the brakes to be unable to decelerate a vehicle.

Thank you for reading another one of my newsletters. You can view and/or print all from my Web site at www.ralphcunningham.net. Please feel free to contact me anytime you have a question regarding any of the vehicle-related services I provide.

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