

# Vehicle Air Bags — Friend or Foe?



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Today's military command and control systems are often equipped with a system known as IFF or identifica-

tion, friend or foe. The term is a bit of a misnomer, as IFF is limited to only identifying friendly aircraft or vehi-

cles. The IFF system simply receives no reply from unfriendly or unidentified aircraft or vehicles.

Today, we find airbags throughout the vehicle's passenger compartment, including side seat and curtain airbags, as well as the really cool "behind sensors" that can decide whether or not to deploy a passenger side airbag based on whether a "behind" is in the passenger seat or not. Airbags are deployed based on the work of several sensors within the vehicle:

- Accelerometers
- Impact sensors
- Side door pressure sensors
- Wheel speed sensors
- Gyroscopes

• Brake pressure sensors, etc.

When the airbag control computer senses a collision, the computer activates a pyrotechnic initiator with a small charge, which in turn ignites a combustible material, which initiates the gas generator, which inflates the airbag with an inert gas. The time from collision detection to full inflation of the airbags is typically between 60 to 80 milliseconds.

From 1990 to 2008, the U.S. National Highway Traffic

see VEHICLE page 58

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# Vehicle Air Bags

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Safety Administration identified 175 fatalities caused by the estimated 3.3 million airbag deployments and 6,377 lives saved and countless injuries prevented. Statistically, it would appear that airbags are a benefit to vehicle occupants during a collision.

How do we (arriving on

an engine or ambulance after the collision is over with) identify whether an airbag is a friend or foe?

The answer is simple and it doesn't take an expensive IFF system. Airbags that have deployed are our friends and those that have not are our foes.

Our circle surveys should always include stabilizing the vehicle and cutting power from the batteries. It is worth mentioning that the inner circle folks (the ones stabilizing and cutting battery power) should have a look inside the vehicle, or at the very least have a face to face

with the individual charged with the extrication plan. If extricating a patient could be accomplished by simply rolling down a power window and moving a motorized seat down and back, we will find that our simple plan is not so simple once the battery power has been severed and the motors operating the seats and windows no longer work. There may be other electrically powered things on the vehicle that you would want to operate prior to cutting power.

If we identify an airbag that has not deployed in the collision, and we do not need the vehicle's electrical power, cutting power from the batteries should be done immediately.

How long, once the battery is disconnected, does it take for the capacitors to lose their ability to fire the airbags? This question has no simple answer as each car manufacturer has designed their capacitors to discharge at different intervals. Most vehicles do not maintain the ability to deploy the airbags beyond between one second and six minutes after the vehicle power is disconnected.

Several older models of Isuzu, Porsche, Saab, and Volkswagen manufactured vehicles can require up to 30 minutes of absent power before the capacitors lose their ability to deploy the airbags.

Disconnecting the vehicle's power should be accomplished by disconnecting (or cutting if necessary) the negative battery cable first, followed by the positive battery cable. Both need to be disconnected. Additionally, we should insure that no metal parts have penetrated the battery case that could recomplete the electrical circuit. Once power has been disconnected, the capacitors will begin to discharge the power they store to deploy the airbags. Once the discharge time has passed, the chance of airbags deploying is significantly reduced.

Keep in mind that a relatively small charge is needed to initiate the airbag deployment process, so static electricity or other electric charges should be avoided even after the batteries have been disconnected and the capacitors have fully discharged. There may also be a battery powered global positioning system (GPS) unit or cell phone that has backfeeds through the vehicle's electri-

cal system, even with the batteries disconnected.

Operating around an undeployed airbag should be done with the utmost caution. Many people like to refer to the "5-10-20 rule" — maintain a separation of five inches from side airbags, 10 inches from driver's side airbags, and 20 inches from passenger side airbags.

If you are using a commercially available airbag cover to prevent full deployment of the airbag, be certain that the cover is designed for the type of vehicle on which it is being placed. Remember that steering wheel spoke and rim can be severed and removed, but never cut or drill into the steering column, particularly one that contains an undeployed airbag.

As we are adding medications to the ambulances, learning new ways to secure an airway, adding super-sophisticated air monitors that can "read the mind of the person that last handled the hazardous material," and refining ways to run into a building with a fire in it, don't forget to keep up with the changes in automobiles. Automobile extrication continues to be a tactically challenging venue of our multi-faceted jobs.

The 2008 Lexus LX570 sports utility vehicle has a mind-numbing 10 airbags throughout the interior passenger compartment. Although this particular vehicle has to be one of the safest to be in during a collision, make sure that when you approach it, or any other vehicle after a collision, that you have your IFF system operating. Be safe and do good.

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