

Supplemental Airbag Restraint Devices

Should We Use Airbag Restraint Devices?

The question of airbag restraint devices keeps surfacing from time to time. It should be noted that there are commercially available soft fabric and steel airbag restraint devices that are placed over an active (non-deployed) driver frontal (steering hub assembly frontal airbag. Additionally there at least two companies offering a fabric curtain/webbing type shield that was designed to shield the front occupants and personnel from. None of which will Extrication.Com endorse or advocate its use.

Three Basic Designs of Restraint Devices

The following are the most common type frontal airbag restraint devices currently being offered to the emergency services:

1. Soft Kevlar sack that slips over the steering wheel ring and fastened in back of the wheel assembly by two straps with metal clasps. One time use.
2. Soft Kevlar Web & Pad device that is applied directly over the steering wheel hub assembly and secured in back of the steering wheel assembly. One time use.
3. Three piece steel device weighing approximately 7 lbs with large points that are intended to puncture the airbag as it deploys.

It is the personal opinion of the author restraint devices should not be used and of the types mentioned, the steel unit is the least safe. Extrication.Com acquired and tested several restraint devices including the steel restraint device.

Each time an airbag was deployed, the cushion ruptured at the sides not from the points. This would indicate that the points didn't perform as indicated. There are J-shaped tabs that hook on the back side of the steering wheel ring in an attempt to secure the device. Steering wheel rings are designed to give for the safety of the driver who may come in contact with the wheel ring during a crash. Manufacturer suggests device can be reused even after deployment. How can the user be sure that there are no hidden fractures in the metal or weld that will give way if used again. The two halves of the unit are held together by a bolt, what happens if the bolt threads are stripped or cross threaded?

Extrication.Com does NOT recommend any device used to restrain an airbag system, or breach any activate airbag or it's components. Doing so could cause serious injury.

Good Intent Verses Responder Safety Concerns

While the original concept/intent was commending, there are issues that the agencies utilizing these devices should know:

- Applying a device over an non-deployed airbag for the purpose of restraining is not supported, recommended nor endorsed by automobile and airbag

manufacturers and National Highway Transportation Safety Administration – Department of Transportation (NHTSA-DOT).

- Should a restraint device be installed and fail, the responder and their agency could be held liable for related injuries should an accidental deployment of the SRS occur after the product was installed.
- These products are responder safety devices, as such formal training should take place and documented those providing the training and attendees.
- Any agency purchasing a restraint device should know what liabilities the manufacturer, municipality and responders responsibilities should a failure of the device and/or improper installation occurs resulting in an injury.
- Should an injury occur resulting from the use of a restraint device, does the municipality then take the airbag and automobile manufacturer's out liability loop since the municipalities used a device that was trying to restrain an automobile safety device that has not been endorsed as a whole by the industry and NHTSA-DOT?

When restraint devices first became available to the emergency services, responders thought the concept was a good idea. When consider responder safety and the question needs to be asked; "Are restraint devices helping responders or are they adding to responder risks during vehicle rescue?"

Mechanical and Operational Failures

There have been numerous documented failures in tests and/or during demonstrations of these restraint devices. Restraint devices have fail to properly restrain the airbag as designed or intended by the manufacturer and/or have become projectiles.

Responders qualified at the basic skills level learn that steering wheel rings by design give upon impact with the driver. This design feature reduces internal injuries to the operator when contact is made during a collision. The steering wheel ring is part of the vehicles passive safety features, and is not designed to withstand the forces created when an airbag deploys and is used as an anchor point for a restraint device.

The steering wheel ring becomes a major component of the restraint device and a factor in the integrity of device to operate properly and safely. Normally the steering wheel ring has no bearing from the deployment of an airbag. When the restraint device is installed directly or indirectly secured/anchored to the steering wheel ring, it becomes part of the equation.

The greatest mechanical failure rate occurred during our tests occurred with a commercially available device called the "Bag Buster". The three component metal device uses the steering wheel ring as an anchor point. When installed on two spoke steering wheel assemblies, a catastrophic failure has occurred each time we tested the system. Without the additional spoke supports, the steering wheel ring readily fails under the forces created by the airbag deployment, resulting in the Bag Buster becoming a projectile with enough force to cause serious injuries.

Routine Inspections

Extrication.Com's recommendations are not to use airbag devices, if your agency chooses to use such a device, routinely safety inspections should follow manufacturer's inspection guidelines. Most manufacturers recommend that once the restraint device has been used during a deployment, it should be permanently taken out of service.

Since the soft devices can be used until involved in a deployment, equipment should be routinely inspected to insure all components are deployment worthy. The steel restraint devices have moving parts that could wear or fatigue from normal use as well. Painted metal could hide stress fractures that can not readily be seen. If you agency intends to use or reuse a restraint device, inspection after a deployment should be done by a factory trained technician.

Responder Safety

There is always the possibility of an accidental deployment of the SRS during extrication, even when the electrical system has been isolated. What would happen if the SRS were to deploy while the device is being installed? What if there was a mechanical failure to either the device and/or the steering assembly during deployment? I would rather be hit with an airbag deploying at 200 miles per hour than while in close proximity to the airbag while attempting to install a restraint device that is not recommended nor endorsed by the industry. In Australia one government body did an extensive study on airbag restraint devices, the final outcome was to discontinue use of the all airbag restraint devices under their jurisdiction.

Liability

Emergency services need to ask what are the consciences should there be an injury resulting from an airbag deployment with your agency owned airbag restraint device that was attached by agency personnel. The victim's injury would not be directly caused by the airbag. Instead it would be by the device that your agency secured over the airbag and between the airbag and the injured party.

So the big legal question is where does the liability lay? And, does putting the restraint device over the airbag release the airbag and automaker from liability causing a shifting of liability to the agency that applied the non-endorse device? These are questions that should be asked to your city/township legal counsel prior to purchasing such a device and perhaps question its continued use if you currently use such a device.

Risk vs. Benefit

In the author's opinion, it is better to risk the remote chance of an injury from a deploying airbag than to apply a restraint device that may cause a greater injury than the airbag.

Coping with an Active SRS

Responders should follow three tasks common to any crash when extrication is involved:

- Immobilize the vehicle from moving on its own or from gravity.
- Stabilize the vehicle as required.
- Disable the vehicle
 - Insure the vehicle is shut down.
 - Disconnect the 12V battery.
 - Distance yourself from any non-deployed airbag

Never restrain or breach a supplemental restraint airbag or it's components. Follow the Extrication.Com's 5-10-20 Inch Rule for coping with non-deployed airbags during vehicle rescue.

Additional training Information available free as a read only file: Extrication.Com's [5-10-20 Inch Rule PowerPoint](#)