

CHILD SAFETY ALARM SYSTEMS
Preliminary Assessment Report– July 2005¹
(Revised September 1, 2005)

Feedback from the initial installation of approved alarm systems in various types of vehicles indicates the need for further education and user awareness. While these mechanical systems can and will be a positive safety factor to help prevent leaving a child in a vehicle unintentionally, they are not fool-proof and have limitations. The systems must be viewed as an additional safety element in the overall process currently in place. **Child safety alarm systems should not be considered short cuts. They should always be used together with other established practices, procedures, and training.**

Inherent Limitations

Child safety alarm systems were initially designed for use in the school bus industry. School bus drivers typically make several pick-up stops and discharge students at one or more locations while remaining in the driver compartment, with the engine running, for the entire route or trip. Usually, all passengers are discharged before the driver travels to another area (i.e., fleet yard) where the empty vehicle is parked and surveyed. Then, walking through the vehicle either before or immediately after shutting down the engine, as required by the specific alarm system, is an effective procedure.

All alarm systems are designed to prompt drivers to perform a “walk-through” after all passengers have exited the vehicle. However, the alarm system’s effectiveness will be diminished for many child care transportation providers that discharge passengers and park the vehicle at a single location. For safety reasons, a driver is usually required to secure the vehicle first by placing the transmission in park, shutting off the engine, and setting the parking brake before leaving the driver’s area to help remove passengers. *(The exception to this is with lift-equipped vehicles that must be left running while using the lift; however, Federal safety standards require various interlocks for safety purposes.)* To avoid the warning alarm while unloading, the driver must deactivate the system with passengers onboard. After unloading the passengers, if the alarm system is not then reactivated by restarting the engine or reactivated by the initial opening of the passenger door, the driver is not reminded to conduct the walk-through survey and the alarm will not sound.

Therefore, this inherent limitation of the alarm warning systems when a vehicle remains parked at the passenger discharge location must be recognized and procedures put in place to compensate for this circumstance.

¹ Coordinated assessment was a collaborative effort between the Arkansas Highway & Transportation Department, Arkansas Transit Association, and several Arkansas alarm system suppliers/installers.

Vehicle Types vs. System Types

Carefully selecting the most appropriate system to install in a specific vehicle type should be the organization's first consideration. Some systems work better than others on different vehicle types. Also, the driver and the effort needed to properly survey the empty vehicle and deactivate the system must always be taken into account. A system that is difficult for drivers will encourage tampering or other efforts to avoid taking the required actions. Providers must do the homework and contact the various suppliers/installers for information before making a final choice.

Most child safety alarm devices are basic alarm systems that function like a simple home burglar alarm. The alarm systems are activated by one of two ways: "passenger door activation" (when the passenger door is opened for the first time after the vehicle is started) or "ignition activation" (when the key is turned to the ignition start position). All systems stay armed until the proper deactivation procedures are followed.

Deactivation buttons should always be mounted in a location that requires a driver to get inside the vehicle facilitating a vantage point to survey all seats, isles, and floor areas.

Passenger Door Activation Systems

This system is triggered when the passenger door is first opened after the vehicle is started. It remains activated throughout the route, however many times the passenger door is opened and closed. This system cannot be deactivated while the passenger door is open. To deactivate the alarm, the driver must first close the passenger door then press the deactivation button in the back of the vehicle before the ignition is turned off or the warning alarm will sound. This system works well on a bus with a center aisle and ample access for the driver to move around inside the vehicle.

However, with a door activation switch, a driver who shuts down the vehicle to unload passengers may not reactivate the alarm system when the vehicle is moved and the passenger door is not opened again. This means that drivers who shut down the engine, unload passengers and then close the passenger door before starting the engine will not reactivate the alarm to remind them to do a survey after parking the vehicle at an alternate location. If the door is open when the engine is started, the system will reactivate and function appropriately after parking the vehicle.

Ignition and Brake Activation Systems

This system is activated when **either** the ignition is turned to the start position **or the brake pedal is depressed**. Deactivation occurs after the driver turns off the ignition. Then, the deactivation button in the rear of the vehicle must be pushed within a short, pre-set time before a warning alarm sounds. Standard production and some modified vans offer restricted access from the driver's area and must be checked by entering the vehicle from the right side passenger doors. Therefore, drivers of these vans find that the ignition **and brake** activated system with a deactivation button tied to a time-delay alarm works best.

Consideration is being given to allowing only ignition and brake activated systems. While this may be an inconvenience to maintenance personnel, or drivers who are not transporting passengers, there is a reassurance the system will always be reactivated when the vehicle is started.

Training

It is very important that all drivers have an understanding of the alarm system, component parts, and how it works. This will help them understand problems when they occur and know what to do or who to call.

Training and understanding of the individual system by the driver is critical to proper operation and troubleshooting. An inoperative or troublesome system must be corrected before any passengers may be transported.

Alarm Time Settings

Systems that require the deactivation to occur within a pre-set period of time should not take so long as to allow a driver to leave the vehicle's parking area before the alarm warning sounds – time settings should be for less than one minute (suggested timing: 45-59 seconds), depending upon the vehicle type and driver requirements to do a survey and deactivate the system. However, systems with a very short time interval, less than 30 seconds, may create problems by forcing a driver to rush, resulting in abbreviated surveys and possible personal injury accidents.

Features

Alarm systems which are hard-wired in the vehicle offer more reliable service with less potential maintenance problems. Purchasers of the wireless remote systems should ensure they follow the manufacturer's maintenance recommendations for battery replacement. A wireless remote control device is subject to outside interferences and may not always work properly.

Some units are supplied with a deactivation key which allows someone to turn the system off for vehicle maintenance or other purposes. Controlling access to the deactivation key so someone does not intentionally deactivate the system while transporting passengers, or inadvertently leave the system deactivated, adds an additional level of responsibility for transportation managers.

Purchasers should ensure that alarm systems with audible tones and signals that alert the driver to their activation and deactivation features are loud enough to be heard by persons with diminished hearing and over other noises in the vehicle environment.

Systems typically use the vehicle horn or an independent siren-type device as the alarm warning mechanism. Purchasers must ensure that the warning sound is loud enough to attract the attention of a person inside a structure or vehicle within the general area of the vehicle – preferably 300 feet or more.

Systems that rely on a vehicle's horn should never be installed in a vehicle if the horn is not functioning properly.

Installation Support and Liability

The business that installs each system has the responsibility and assumes certain liability to ensure the system is properly installed and the person or organization purchasing the unit is thoroughly familiar with the system components and operations. Purchasers should ensure that they receive written materials containing system operating information, components and wiring information, warranty information, and contact information for problem resolution.

Purchasers are advised to obtain equipment and installation from only established, reputable businesses. Such businesses should demonstrate they have the appropriate liability protections for the products they sell and afford the consumer all protections required by Arkansas law.