

Safety Considerations for Operating 15-Passenger Vans

Risk Control from Liberty Mutual Insurance



Highlights:

- NHTSA recommendations
- Handling characteristics
- Seatbelts drastically reduce fatalities
- Recommended controls
- Dynamic stability control using technology

Many companies and organizations own and operate 15-passenger vans. Other organizations, including schools, colleges, vanpools and churches, occasionally rent vans to transport groups of employees or others to functions and events.

While 15-passenger vans are convenient, drivers and passengers must use caution to minimize the risks associated with these vehicles. National Highway and Traffic Safety Administration (NHTSA) research has shown that 15-passenger vans have a rollover risk that increases dramatically as the number of occupants increases from fewer than five to more than ten. In fact, 15-passenger vans carrying 10 or more occupants had a rollover rate in single vehicle crashes nearly three times the rate of those carrying fewer than five occupants.

NHTSA recommends the following:

- Drivers insist that all occupants wear safety belts at all times.
- Drivers are trained and experienced.
- Tires are checked at least once a week using the manufacturer's recommended pressure levels.
- No loads are placed on the roof of the vehicle.

Handling Characteristics

NHTSA studies show that loading these vehicles to their rated capacity has an adverse affect on the rollover propensity, due to the increase in center-of-gravity height. Loading these vans with passengers and their cargo moves the center of gravity rearward, which increases the vertical load on the rear tires. This situation is made even worse when users place cargo on the roof of the vans.

Some vehicle manufacturers compound the problem by extending the rear passenger compartment well behind the vehicle's rear wheels. When the vans are fully loaded, there is a seat with four passengers behind the rear axle. This tends to make the back end of the vehicle heavy enough so that if there is a sudden swerve, the rear end can swing out.

These factors combine to create stability problems, particularly when drivers make sudden and severe steering actions in response to unexpected traffic situations, or when they inadvertently drop wheels off the roadway and attempt to recover.

NHTSA research is very clear that the handling characteristics between a lightly loaded 15-passenger van and a fully loaded van are significantly different. The handling characteristics of these vehicles changes during extreme maneuvers, depending on the load. A fully loaded van is inherently less stable than an unloaded one.

Wheelchair lifts and raised roofs make the situation even worse by adding additional weight to one side of the chassis and raising the center of gravity. Vans with wheelchair lifts should be equipped with heavy-duty suspensions, anti-sway bars if available, and heavy-duty tires. Wheelchairs themselves, particularly battery powered ones, add to the total weight carried by the vehicle and should be considered when calculating the gross vehicle weight.

Seatbelts Drastically Reduce Fatalities

During the period from 2003 to 2007, about 68 percent of all occupants in 15-passenger vans involved in fatal crashes were unrestrained, compared to about 55 percent for occupants of passenger vehicles. Over this same time period, about twice the number of survivors were restrained versus unrestrained. For those fatally injured, there were 4 times as many unrestrained as restrained. Clearly, restraint use drastically impacts survivability when a 15-passenger van rolls over.

Recommended Controls

- Carefully adhere to strict driver qualification and hiring standards, including previous driving history and reference checks.
- Enforce a policy that all occupants of these vehicles wear seat belts.
- Do not load these vehicles to their full capacity.
- Employ experienced drivers who have successfully completed classroom and on-road training in the operating and handling characteristics of 15-passenger vans.
- Do not drive 15-passenger vans, regardless of load, more than 55 miles per hour.
- Maintain tire pressures as recommended by the vehicle manufacturer for the load the vehicle will carry. Check tire pressures daily.
- Require occupants to sit as far forward of the centerline of the vehicle as possible.
- Do not load luggage or other items on the roof.
- Maintain a minimum of 4 seconds following distance between the van and traffic in front.
- Complete pre- and post-trip vehicle inspections prior to each operating cycle.
- Complete preventative vehicle maintenance according to the manufacturer's recommendations.
- Ensure that drivers are well rested.
- Ensure that drivers are not distracted while driving. This may include forbidding cell-phone use, eating, etc.
- Adjust mirrors to eliminate blind spots to the sides and rear of the vehicle. For additional information on mirror adjustment, see Liberty Mutual Insurance Reference Note, *Mirrors for Light and Medium Trucks*, RC 280.

Dynamic Stability Control Using Technology

Some manufacturers have either eliminated the production and sale of 15-passenger vans or have completely redesigned them, including adding in-vehicle technology that improves vehicle stability. NHTSA has tested one van equipped with Electronic Stability Control (ESC). The results of this study show that the installation of ESC on fully loaded 15-passenger vans may have important safety benefits in some, but not necessarily all driving maneuvers. NHTSA intends to perform further testing on the effectiveness of ESC in these vehicles.

Additional Information

For additional information on this to, you may wish to search out 15-passenger van safety on the following sources:

- Safercar: <http://www.safercar.gov/>
- National Highway and Traffic Safety Administration: <http://www.nhtsa.gov>

References

Subramanian, R., *Fatalities to Occupants of 15-Passenger Vans, 1997-2006*, Report No. DOT-HS 810 947, Washington, DC: National Highway Traffic Safety Administration, 2008.

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The Rollover Propensity of Fifteen-Passenger Vans, NHTSA Research Note, April 2001.

Testing the Dynamic Rollover Resistance of Two Fifteen-Passenger Vans With Multiple Load Configurations, NHTSA Technical Report, DOT HS 809 704, June, 2004.

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