

WHEELCHAIR TIEDOWN AND OCCUPANT RESTRAINT SYSTEMS FOR USE IN MOTOR VEHICLES

SAE J2249 September 1997

SAE Recommended Practice

Foreword

For people with disabilities who are unable to transfer from their wheelchairs when traveling in motor vehicles, the wheelchair must serve as the vehicle seat. This usually means that the occupant restraint system installed by the vehicle manufacturer cannot be used to provide protection in a crash. In addition, the wheelchair must be secured to the vehicle so that it does not impose forces on its occupant and/or become a hazard to other vehicle occupants in a collision or sudden vehicle maneuver. Providing occupant protection for the wheelchair-seated occupant, therefore, requires that after-market equipment be installed to secure the wheelchair and restrain the wheelchair-seated occupant.

This recommended practice applies to the design and performance of motor-vehicle adaptive equipment referred to as wheelchair tiedown and occupant restraint systems or WTORS. It is the purpose of this document to encourage the design, testing, installation, and use of WTORS equipment that will provide effective wheelchair securement and occupant restraint in a frontal collision, and that will be comparable in crash performance to seat securement and occupant restraint systems provided by the vehicle manufacturer. While the primary concern is to reduce the potential for injury to wheelchair-seated occupants involved in a frontal vehicle crash, it is anticipated that achievement of improved occupant protection will also result in increased driver and passenger safety and comfort during normal travel. The provisions of this document should not be used to discourage people with disabilities from using motor vehicle transportation or to limit access to, and availability of, motor vehicle transportation to wheelchair users.

Since manufacturers of WTORS are generally not able to control or specify the end use of their products, the 48-kph, 20-g sled impact test specified in Appendix A is intended to qualify WTORS for use in vehicles with a gross vehicle weight of less than 7000 kg. In larger vehicles, it may be possible to provide safe transportation using WTORS that do not comply with the level of crash severity used in this recommended practice.

As with any vehicle seat, the wheelchair is an important component of the occupant protection system, and also contributes significantly to the stability and comfort of the wheelchair-seated occupant during normal travel. Design and performance of wheelchairs used as seats in motor vehicles is addressed in a separate, but related, ANSI/RESNA standard now under development.

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