

Wheelchair Transportation Safety Standards

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RESNA and ISO have developed voluntary standards that can be used to evaluate products.

Scope	RESNA Standard	ISO Standard
Wheelchair tiedowns and occupant restraint systems	WC18 (was SAE J2249)	10542-1
Wheelchairs used as Seats in Motor Vehicles	WC19	7176-19
Wheelchair Seating	WC20	16840-4
Rear-facing Spaces in Large Heavy Buses	WC10	10865-1
Forward-facing Spaces in Large Heavy Buses	---	10865-2

Independent Travel for WC Users

For people who use wheelchairs as their vehicle seat to travel independently in AV fleets, the following three characteristics are needed:

Universality - All combinations must work: any wheelchair should be able to be secured in any vehicle

Independence - The system must allow the traveler to secure their wheelchair and use occupant protection systems without third-party assistance.

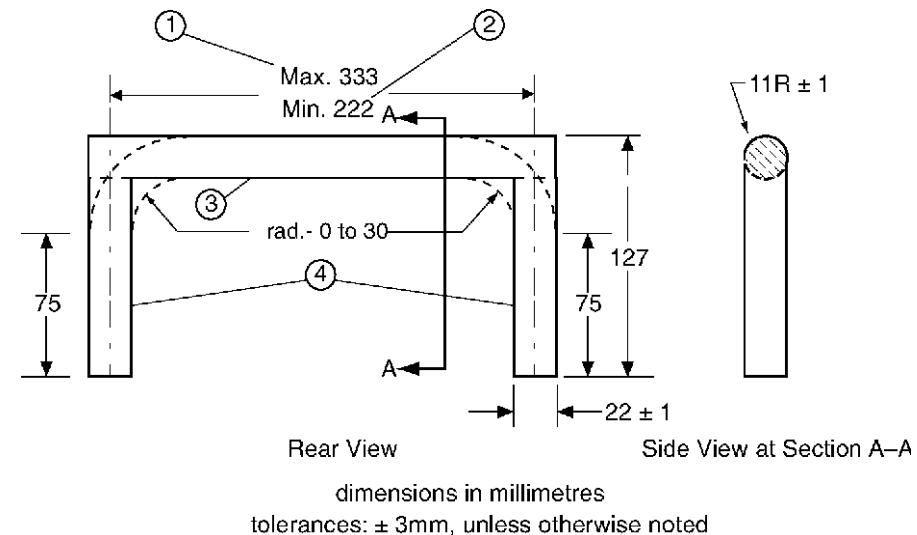
Crashworthiness - The wheelchair securement system must be crashworthy for smaller, passenger-sized vehicle.

Current Wheelchair Tiedowns Do Not Meet All Three Criteria

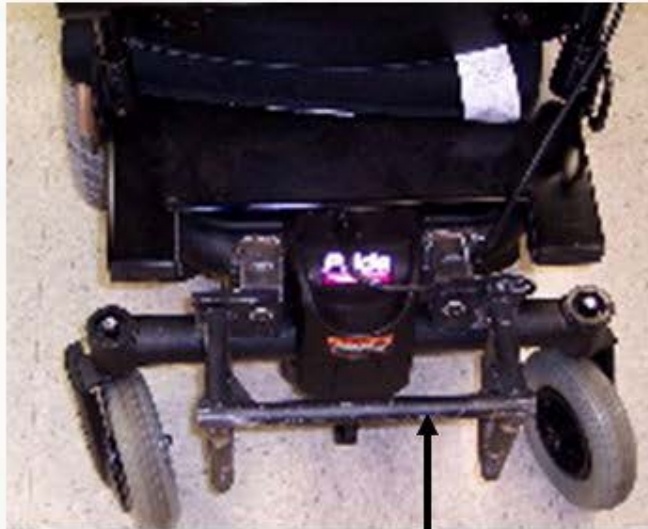
Wheelchair Securement Method	Independence	Crashworthy in passenger vehicles	Universality
4-point straps paired with seat belt	No	Yes	Yes
Docking paired with seat belt	Yes	Yes	No
Rear facing stations	Yes	No	Yes

One Solution/Concept: Universal Docking Geometry (UDIG)

- Defined geometry for connection wheelchairs to vehicles. Based on the idea of truck trailer hitch
- If implemented, allows a wheelchair to use docking in all types of vehicles.
- Geometry has been defined and field tested.
- Requires both WC and WTORS manufacturers to work together
- Already implemented in standards
- No commercial use.



Examples of Universal Docking (UDIG)



UDIG Adapter

