

## Transportation and crash testing

For a wheelchair user, ability and to freedom to travel has become a basic requirement. However travel requires consideration and management of several risk factors.

The preferred initial recommendation is occupant transfer from the wheelchair to a vehicle seat, with the wheelchair stored separately and securely during the journey. The Greencare wheelchair, even larger sizes, can be configured for compact storage, with detachable components for reduced lifting weight. Occupant transfer from wheelchair to vehicle seat should be done with minimal risk. Occupants should be encouraged to transfer independently. Carers should not get involved in unsafe handling practices.

We use the ISO 7176-19 crash impact test in our product test and approval process. This test simulates a forwards facing crash with a 75Kg wheelchair occupant seated in a wheelchair secured with tie downs in a road vehicle travelling at 30mph. The crash impact is a 20G deceleration. This is a force combination equivalent to hitting a large tree head on. We have successfully crash tested different DB1 configurations, using 4 point wheelchair tie downs and occupant restraints supplied by Unwins. Tie down location points are indicated on wheelchair frames.

For wheelchairs that are stored during a journey, and some adapted configurations of DB1 including adult active user wheelchairs with a low backrest height and front wheel propelling wheelchairs, the crash test is not applicable to required function.

Large DB1 wheelchairs can be size configured for compact turning, and tight space access. Handrims provide wheel strength and should not be removed. Tie downs place excessive loads on the wheels, increasing requirement for frequent wheel checking. The following checklist for transportation of occupants in wheelchairs applies.

*The wheelchair should be secured to the floor in a forwards facing direction.*

*The wheelchair and occupant must be secured to the vehicle independently.*

*More than one person should not occupy the wheelchair.*

*The wheelchair should be fitted with a head restraint.*

*The upper occupant restraint should be secured to the vehicle above shoulder height.*

*No component of the restraint should pass through the wheelchair wheels.*

*The wheelchair should not be modified or strained to allow the fitting of restraints.*

*Loose fitting attachments should be removed from the wheelchair.*

Accident statistics indicate that the most hazardous aspects of the transportation of wheelchair users occur during transfer in and out of the vehicle. Facilities for transfer such as tail lifts and ramps should be regularly checked and maintained, and operators fully trained in correct use. MHRA guidelines DB2001 ( 03) contains useful information. User training, plus information on available transport infrastructure are important. Dept of Transport have made public transport more safely accessible for wheelchair users.

The driver of a vehicle carrying people with disabilities has the significant responsibility of ensuring that everyone arrives safely. Driving at reduced speed reduces accidents and injuries. Minor surface bumps, such as traffic calming features that can result in unsettling occupant movement should be negotiated with care. Journey planning and local knowledge which eliminates the need for vehicle to encounter hazards during the journey is recommended.