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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Technical systems and aids for disabled or handicapped persons - Wheelchair tiedown and occupant-restraint systems - Part 1: Requirements and test methods for all systems

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Foreword

This document complies with the provisions of GB/T 1:1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents"

Drafting:

This document is Part 1 of GB /Z 43468 "Assistive technology systems and assistive devices for people with disabilities, wheelchair fastenings and occupant restraint systems"

part: GB /Z 43468 has published the following parts:

---Part 1: General requirements and test methods:

This document is equivalent to ISO 10542-1:2012 "Assistive technology systems and assistive devices for people with disabilities, wheelchair fastenings and occupant restraints"

System Part 1: General Requirements and Test Methods", the document type was adjusted from ISO standards to my country's national standardization guiding technology

document:

This document has made the following minimal editorial changes:

---Incorporates the contents of ISO 10542-1:2012/COR1:2013 and ISO 10542-1:2012/AMD1:2021:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

Many wheelchair users remain seated in the wheelchair when riding in a motor vehicle, so their wheelchair is equivalent to a seat in the motor vehicle:

In the event of a motor vehicle collision, the occupant restraint system installed by the motor vehicle manufacturer cannot provide protection for the wheelchair occupant:

In addition, in order to ensure that the wheelchair does not exert force on the occupant in the event of a collision or emergency maneuver, threatening the safety of other occupants of the motor vehicle

To ensure safety, the wheelchair needs to be fastened to the motor vehicle: Therefore, safely transporting the wheelchair rider requires effective means of fastening the wheelchair and restraining the rider:

equipment:

The main purpose of this document is to reduce the risk of serious injury to wheelchair passengers in frontal collisions: The rest of the subsequent GB /Z 43468 elaborates

Describe different collision conditions and directions: However, it can be expected that the proper use of equipment that complies with the requirements of this document will also reduce other types of crashes

Risk of injury in accidents and rollovers, emergency maneuvers and normal driving: In addition, Appendix K covers wheelchair fastening and occupant restraint systems:

(WTORS) The manufacturer provides test methods and performance requirements for the performance of wheelchair fastening systems under rear impact conditions: Appendix M is for wheelchairs:

The manufacturer of vehicle restraints and occupant restraint systems (WTORS) provides tests to evaluate the performance of head and back restraints under rear impact conditions:

Try the method:

The terms of this document are based on the fact that manufacturers of wheelchair fastening and occupant restraint systems generally have no control over the end use of their products:

a premise: Therefore, this document requires that wheelchair fastening and occupant restraint systems for all types and sizes of motor vehicles be labeled at the end of the

Under severe conditions, that is, under the conditions of a frontal trolley collision test with a speed of 48km/h and an acceleration of 20g, an 85kg wheelchair replacement device is

used:

A test device (SWC) and an anthropomorphic test device representing a medium-sized adult male were dynamically loaded to test the dynamic crashworthiness: Appendix K describes

Test method to withstand 14g, 25km/h rear impact bollard test:

Affected by a variety of factors (such as a serious crash, a frontal collision with a certain angle, a large wheelchair, and a heavy passenger), although

In a small number of real-life motor vehicle collisions, the forces on the wheelchair's fastening and occupant restraint system components are greater than the worst-case scenarios identified in this document:

forces generated in severe frontal impact tests, but there is currently no evidence that wheelchair fastening and occupant restraint system components perform in real-life machines:

Damaged in a train collision: Because, there is currently no basis to increase the mass of the substitute wheelchair vehicle (SWC) and the crash test dummy in this document:

The quality may improve the severity of accidents in frontal crash tests of universal wheelchair tie-downs and occupant restraint systems and therefore requires careful and ongoing research:

Monitoring the performance of wheelchair tie-downs and occupant restraint systems in real-life motor vehicle crashes: However, the wheelchair fasteners and the rider

In addition to testing their products under the conditions described in this document, restraint system manufacturers may also test under conditions higher than those required in this document:

It has been proven that in frontal collisions, rollovers and most side collisions of motor vehicles, wheelchairs using belt-based occupant restraint systems can be secured:

and occupant restraint systems can most effectively protect the occupants and can be relatively easily implemented in the forward-facing seat position of the motor vehicle: Therefore, this document requires

Every wheelchair fastening and occupant restraint system shall include a belt-type occupant restraint system: Due to the protection provided by only one pelvic belt

The full level is not as high as the pelvic belt plus torso belt: Therefore, this document requires that the wheelchair fastening and occupant restraint systems include the pelvic belt and torso belt:

straps, and only the test methods for the fastening and occupant restraint systems of such wheelchairs are specified:

Although GB/T 18029:19 does not require the pelvic belt to be fixed to a wheelchair for crash testing, GB/T 18029:19 allows it to be fixed to the opposite wheel:

Tests are conducted under restraint conditions that are beneficial to the chair vehicle occupant, such as improving the fit of the pelvic girdle to the occupant's pelvic area and reducing driver or care

interference with the passenger's personal space: In this case, since part of the load of the occupant restraint system is transferred to the wheel by the wheelchair

Chair-car fastening systems, the fastening components in wheelchair-car fastening and occupant restraint systems are

The load is higher: For this reason, manufacturers of wheelchair fastening and occupant restraint systems also want to be able to secure the pelvic girdle to wheelchair replacement devices:

(SWC)'s securing system was subjected to crash testing: Appendix L describes vehicle-mounted shoulder straps for wheelchair occupants and wheelchair-mounted shoulder straps:

A method to evaluate the wheelchair fastening system when restrained by a three-point safety belt consisting of a pelvic belt:

For barrier-free transport vehicles (ATV-SS) where passengers sit or stand, effective wheelchair seating systems are usually provided on the vehicle:

With advanced wheelchair parking equipment or systems, major collisions rarely occur: This system can generate less than 1g through emergency maneuvers of a motor vehicle

The acceleration and deceleration simulate non-collision conditions for evaluation: The rear-facing wheelchair passenger seat (RF-WPS) is adopted to make the transportation safer:

It will make the operation of the transportation system more acceptable: For the relevant requirements for passenger seats in rear-facing wheelchairs, see ISO 10865-1:

When this document was drafted, the four-point belt fastening system was considered to be the most suitable method for wheelchair users to secure their wheels when traveling on public motor vehicles, school buses and private cars:

The most efficient and versatile way to use a chair car: Therefore, GB/T 18029:19 requires that wheelchairs used as motor vehicle seats must have two seats at the front and rear, with a total of

Securing with a four-point strap lashing system with four designated lashing points: However, the docking fastening device in the motor vehicle can also be used to secure the wheelchair: