AS 2942—1994

Australian Standard®

Wheelchair occupant restraint assemblies for motor vehicles

This Australian Standard was prepared by Committee ME/48, Restraint Systems in Vehicles. It was approved on behalf of the Council of Standards Australia on 4 February 1994 and published on 16 May 1994.

The following interests are represented on Committee ME/48:

ACROD
Australian Automobile Association
Federal Chamber of Commerce and Industries
Australian College of Rehabilitation Medicine
Commercial Vehicle Industry Association of Australia
Department of Transport and Communication
Department of Veterans Affairs
Federal Chamber of Automotive Industries
Federation of Automotive Products Manufacturers
Roads and Traffic Authority of N.S.W.
University of N.S.W.
Vic Roads

Additional interests participating in preparation of Standard:

Motor vehicle and restraint manufacturers
Regency Park Centre for Young Disabled (Adelaide)
Royal North Shore Hospital (Sydney)
Royal South Sydney Hospital
Spastic Society of Victoria
University of Adelaide

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PREFACE

This Standard was prepared by the Standards Australia Committee on Restraint Systems in Vehicles, to supersede AS 2942—1987.

Because the first edition of this Standard was rapidly accepted and adopted into legislation in most Australian States, more information is required to verify the acceptability of given wheelchair occupant restraint assembly 'kits' available for purchase, and the removal of some previously specified installation requirements that are now subject to vehicle registration authorities' specification and approval.

This edition differs from AS 2942—1987 in the following ways:

(a) The marking requirements now include part numbers on each readily separable component or subassembly and, where alternative or additional components may be available, an indication of compatibility between components.

(b) The packaging requirements now separately specify the information to be displayed externally to assist with selection of an appropriate assembly, and information to be contained within the packaging.

(c) The intent of the instructions for use and for installation has been modified so that it is now required that this information be supplied as guidelines by the restraint manufacturer. However, it is not mandatory for the restraint manufacturer to ensure that these guidelines are adopted. Manufacturers of restraint assemblies are required, where practical, to design components so that incorrect use, orientation and restraint geometry is not possible.

(d) The range of sizes and types of wheelchairs compatible with a restraint assembly is now fully specified within the Standard or, where a restriction to this range applies, by the restraint manufacturer. References to occupant garment sizes and thickness of cushions have been deleted.

(e) The method of test for dynamic performance of restraints has been amended to improve clarity, and remove interpretations previously required. The positioning of restraint assembly mounting points on the test trolley has been more precisely specified.

(f) 'Guidelines for vehicle reinforcement', previously Appendix C, has been deleted as more specific requirements are now necessary to suit some vehicle registration authority specifications.

(g) 'Guidelines for vehicles used for transport of occupants in wheelchairs', previously Appendix D, has now been deleted as unnecessary. Advice on vehicles is obtainable from vehicle registration authorities.

(h) 'Guidelines for wheelchairs used in vehicles', now Appendix A, has been amended as its recommendations were subject to misinterpretation, resulting in refusal to permit a wheelchair occupant to travel in a vehicle in their usual wheelchair.

It recognizes that a wheelchair that best serves the overall needs of its owner may not be ideal for restraint in motor vehicles, and that prohibiting the use of such wheelchairs in a vehicle is not practical despite some additional risks of injury.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

CONTENTS

FOREWORD

Wheelchair occupant restraint assemblies complying with this Standard will give protection in most accidents if they are properly installed and attached, and worn correctly. In general, wheelchairs are not well suited to the requirements of vehicular seating, and the safety of passengers is best assured by the use of normal passenger seats and seat belts. Wheelchair occupants should transfer to passenger seats in vehicles and use the seat belt provided whenever that is practicable, and unoccupied wheelchairs should be restrained.

Effective restraint for people occupying wheelchairs requires the wheelchair to be secured in the transporting vehicle, with the occupant restrained by a seat belt which itself is secured directly to the vehicle or to parts which are themselves secured to the vehicle. The wheelchair contributes to restraint of the occupant by virtue of the support provided by the wheelchair seat, backrest, and armrests. The complete restraint for the occupant includes the wheelchair itself, i.e. includes restraints for the occupant and the wheelchair.

There are currently no recognized Standards covering wheelchairs suitable for vehicle seating, and, even if such Standards could be rapidly implemented, the problems of vehicular transport for people occupying non-complying wheelchairs would remain for many years. However, provided that suitable restraints are fitted, tests have shown that some types of wheelchairs can survive a severe impact without fractures of the frame.

This Standard specifies restraints for wheelchairs and their occupants and does not specify strength requirements for wheelchair structures or for vehicle structures used to anchor wheelchair occupant restraint assemblies. Rather, the manufacturer of wheelchair occupant restraint assemblies is required to provide details of strength requirements at the anchorages of a restraint assembly. Vehicle regulatory authorities require approval of restraint installations, and should be consulted for advice on reinforcement of vehicle structures at anchorages.

To allow for various applications, the Standard allows for designs that do not require any wheelchair modifications, those in which parts of the restraint assembly are fitted onto the wheelchair restraint assemblies, wheelchairs that incorporate a child safety seat complying with AS 1754 *Child restraint systems for use in motor vehicles*, and wheelchair frames manufactured with integral restraint components.

STANDARDS AUSTRALIA

Australian Standard

Wheelchair occupant restraint assemblies for motor vehicles

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for restraint assemblies for commonly available manual and electric wheelchairs and their occupants in motor vehicles.

This Standard does not apply to the restraint of wheelchair occupants who are driving a vehicle.

NOTES:

1 It is a requirement of most States and Territories that their vehicle registration authorities approve the installation of a wheelchair occupant restraint assembly.

2 Appendix A gives guidelines for wheelchairs for use in vehicles.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
1753	Webbing for restraining devices for occupants of motor vehicles
AS/NZS	
1754	Child restraint systems for use in motor vehicles
2596	Seat belt assemblies for motor vehicles
4475	Restraint systems for motor vehicles—Performance tests
4475.1	Method 1: Determination of webbing durability in adjustment duty
4475.2	Method 2: Determination of webbing durability in withdrawing and retracting duty through a sash guide
4475.3	Method 3: Determination of fatigue resistance of a flexible member
4475.4	Method 4: Determination of adjustment device forces
4475.5	Method 5: Determination of locking angle of tilt-lock adjustment device
4475.6	Method 6: Determination of free-end device strength
ADR*	
4	Seat belts
11	Internal sun visors
21	Instrument panel

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.3.1 Anchor fitting—the terminal part of an occupant restraint strap designed to transfer forces of restraint to the vehicle, or to the structure of the wheelchair restraint assembly.

1.3.2 Anchor point—the point where the centre-line of an occupant restraint strap passes into the anchor fitting or changes direction. For anchor fittings which are designed to pivot or are secured by a single bolt, the anchor point is the intersection of the axis of rotation, or the centre-line of the bolt, with the surface of the supporting structure. (See also Clause 1.3.20.)

1.3.3 Anchorage—that part of a vehicle designed to transfer loads from a wheelchair occupant restraint assembly to vehicle structure.

* Australian Design Rules for motor vehicles and trailers. This reference refers to the latest edition of the design rule, in place at the time this Standard is used.