

Australian Standard[®]

**Motor vehicle controls—
Adaptive systems for people with
disabilities**

Part 1: General requirements

This Australian Standard was prepared by Committee ME/67, Mobility Appliances for People with Disabilities. It was approved on behalf of the Council of Standards Australia on 8 May 1991 and published on 12 July 1991.

The following interests are represented on Committee ME/67:

ACROD

Attorney-Generals Department
Australian Association of Occupational Therapists
Commercial Vehicle Industry Association of Australia
Confederation of Australian Industry
Crippled Childrens Association of South Australia
Department of Health, New South Wales
Department of Health, Queensland
Department of the Premier and Cabinet, South Australia
Department of Veterans Affairs
Disability Advisory Council of Australia
Disabled Peoples International (Australia)
Federal Chamber of Automotive Industries
Health Department, Victoria
Institution of Engineers, Australia
Metal Trades Industry Association of Australia
National Committee Independent Living Centres
Paraplegic and Quadriplegic Association of New South Wales
Paraplegic and Quadriplegic Association of Victoria
Royal North Shore Hospital
Royal Perth Hospital
Technical Aid to the Disabled
University of Adelaide
University of Canberra
University of Melbourne
WorkCover Authority, New South Wales

Additional interests participating in the preparation of this Standard:

Australian Association of Engineers for Disabled Drivers
Commonwealth Department of Community Services and Health
Cumberland College of Health Sciences
Department of Motor Transport, South Australia
Disabled Motorists (Victoria)
The Salvation Army Bethesda Hospital, Victoria
VIC ROADS

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 90099.

Australian Standard[®]

**Motor vehicle controls—
Adaptive systems for people with
disabilities**

Part 1: General requirements

First published as AS 3954.1—1991.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6964 6

PREFACE

This Standard was prepared by the Standards Australia Committee on Mobility Appliances for People with Disabilities following a request by the New South Wales Association of Occupational Therapists for an Australian Standard for the design, installation and maintenance of adaptive control systems for motor vehicles. This Association expressed concern that there was currently no regulation of such adaptations in motor vehicles and no document giving guidelines on minimum requirements for the safety and quality of adaptive motor vehicle controls.

The Committee decided to publish a Standard in two parts—this Standard covering general design, construction and installation requirements for a wide range of adaptive motor vehicle controls, including hand controls, and Part 2, *Hand controls—Product requirements*, specifically for hand controls as a product available for installation in a vehicle. Whereas this Standard specifies performance tests to be carried out on driving controls that have been installed in a vehicle, Part 2 specifies performance tests for hand controls mounted in a test rig.

Minimum requirements have been set that are based on performance criteria, with design requirements limited to aspects concerning safety, and compliance with the requirements set down in Australian Design Rules for Motor Vehicles and Trailers.

Recognition has been given to possible disadvantages to people with disabilities which could occur through setting down design requirements with which some special adaptations, related to a driver's particular disability, could not comply. The Standard has identified areas where these conditions may apply. Relevant clauses in the Standard give the inspecting authority jurisdiction where the driving control for a person with a particular disability is the only means by which that person can operate the motor vehicle.

CONTENTS

	Page
FOREWORD	3
1 SCOPE	4
2 APPLICATION	4
3 REFERENCED DOCUMENTS	4
4 DEFINITIONS	4
5 DESIGN, CONSTRUCTION AND INSTALLATION REQUIREMENTS	4
6 PERFORMANCE REQUIREMENT	5
7 INFORMATION TO BE SUPPLIED	5
APPENDICES	
A GENERAL INFORMATION ON THE INSTALLATION AND USE OF ADAPTIVE MOTOR VEHICLE CONTROLS	7
B STRENGTH OF HAND CONTROL IN BRAKE OPERATION	9
C STRENGTH OF HAND CONTROL IN ACCELERATOR OPERATION	10
D STRENGTH OF FOOT-OPERATED CLUTCH AND BRAKE PEDAL EXTENSIONS	10
E FATIGUE AND THE DRIVER	11

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

FOREWORD

Driving a motor vehicle is a major step towards independence for people with disabilities. Without this, the opportunities for achieving a full and independent life are limited, along with the freedom of choice that such a level of independence gives.

Overall, in the past, low priority has been given to ensuring the quality and safety of products and services available to meet the mobility needs of disabled people.

Users of mobility appliances need the assurance that the product they choose will be reliable, will meet a satisfactory level of performance and will be able to be effectively serviced and maintained. This is particularly so because of the level of dependency on these products by the consumer, and the added difficulties often encountered by people with disabilities in gaining access to maintenance and repair services.

This Standard fulfils the need for a set of minimum requirements for the general installation of adaptive motor vehicle control systems. In cases where custom-built systems cannot meet all of the requirements relating to alterations to the vehicle, it is recommended that expert assistance be sought to ensure that vehicle safety standards are maintained and that the quality of materials is not compromised.

STANDARDS AUSTRALIA

Australian Standard

Motor vehicle controls—Adaptive systems for people with disabilities

Part 1: General requirements

1 SCOPE This Standard specifies design, construction and installation requirements for driving controls that allow vehicles to be driven by drivers with physical disabilities and also specifies performance requirements and tests to be carried out after a driving control has been installed in a vehicle.

Types of driving controls covered by this Standard include hand controls, pedal extensions, accelerators for the left foot, extensions of hand-operated controls, and steering wheel attachments. This Standard does not cover electromechanical-type controls.

NOTE: General information on the installation and use of adaptive motor vehicle controls is given in Appendix A.

2 APPLICATION This Standard is intended for use by people engaged in manufacturing and installing motor vehicle control adaptations, road traffic administration authorities, advisers to people seeking information on adaptive motor vehicle control needs, driving instructors, occupational therapists and other health professionals engaged in the rehabilitation of disabled people, and users of adaptive motor vehicle controls.

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

AS

3954 Motor vehicle controls—Adaptive systems for people with disabilities

3954.2 Part 2: Hand controls—Product requirements

ADR

12 Australian Design Rules for Motor Vehicles and Trailers (and subsequent editions)
Glare reduction in field of view

42 Australian Design Rules for Motor Vehicles and Trailers (and subsequent editions)
General safety requirements

4 DEFINITIONS For the purpose of this Standard the definitions below apply.

4.1 Driving control—any device, including hand controls, fitted to or intended to be fitted to a vehicle to enable the vehicle to be driven by a person with a disability.

4.2 Electromechanical-type control—a device that is electrically operated and has mechanical motion, such as relays or servos.

4.3 Extension devices—devices which extend the operation point of existing controls.

4.4 Hand control—a control which enables controls of a vehicle which are normally operated by foot to be operated by hand.

4.5 Pedal extension—devices which relocate the surface of pedals.

4.6 Shall—indicates that a requirement is mandatory.

4.7 Should—indicates a recommendation.

4.8 May—indicates the existence of an option.

5 DESIGN, CONSTRUCTION AND INSTALLATION REQUIREMENTS Driving controls shall comply with the following:

NOTE: Attention is drawn to Item (o), the requirements of which may not apply where controls are custom-built for a person with a particular disability where these controls are the only means by which that person can operate the vehicle, and an administering authority deems that exemption is warranted.

(a) Driving controls shall be balanced so that neither the brake nor the accelerator is actuated in the 'hands-off' mode.

(b) Driving controls shall be designed to require distinctly different motions for acceleration, brake actuation and clutch application where applicable.

NOTE: The intention is to prevent the inadvertent operation of these controls.

(c) Where an additional accelerator pedal is fitted to the left of the existing brake or clutch pedals (or both), both the left-hand and the right-hand pedals shall be independently capable of being rendered inoperable.