AS 3954:2019

Australian STANDARD

Motor vehicle driver controls – Adaptive systems for people with disabilities

STANDARDS Australia

AS 3954:2019

This Australian Standard® was prepared by ME-067, Assistive Technology Products for Persons with Disability. It was approved on behalf of the Council of Standards Australia on 27 March 2019.

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The following are represented on Committee ME-067:

Assistive Technology Suppliers Australasia
Australian Rehabilitation and Assistive Technology Association
Canterbury Employers' Chamber of Commerce
Heavy Vehicle Industry Australia
Independent Living Centres Australia
Medical Aids Subsidy Scheme (MASS)
National Disability Insurance Agency
Novita Childrens Services
Occupational Therapy Australia
Physical Disability Australia
Royal Perth Hospital
TAD Australia

Additional Interests

Department of Transport and Main Roads (QLD)
Mobility Engineering
OT Solutions
PME Auto Conversions
Transport NSW

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Originated as AS 3954.1—1991 and AS 3954.2—1991.
Revised and redesignated as AS 3954:2019.

Preface

This Standard was prepared by the Standards Australia Committee ME-067, Assistive Technology Products for Persons with Disability, to supersede AS 3954.1—1991 *Motor vehicle controls—Adaptive systems for people with disabilities, Part 1: General requirements* and AS 3954.2—1991 *Motor vehicle controls — Adaptive systems for people with disabilities, Part 2: Hand controls — Product requirements.*

This Standard was originally prepared 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.

Minimum requirements that are based on performance criteria have been specified, with design requirements limited to aspects concerning safety, and conformance to the requirements set down in Australian Design Rules for motor vehicles and trailers.

Recognition has been given to possible disadvantages to setting down design requirements with which some special adaptations, related to a driver's particular disability, could not conform. 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.

This Standard consolidates and replaces AS 3954.1 and AS 3954.2.

The main changes from the previous edition are as follows:

(a) Application of supplemental restraint systems, e.g. airbags.

(b) Inclusion of electromechanical controls.

(c) Devolvement of control systems into primary and secondary.

(d) Requirements for driving from a wheelchair.

(e) Inclusion of testing for fatigue failure and loosening of fasteners.

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

Introduction

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.

Users of assistive technology 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 are required to alter 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.

This Standard is intended for use by people engaged in manufacturing and installing motor vehicle control adaptations, road traffic administration authorities, people seeking information on adaptive motor vehicle control needs, driving instructors, occupational therapists and other health professionals involved in assessing fitness to drive and/or vehicle access needs for people with a disability, and users of vehicle modifications.

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1 Scope

This Standard specifies design, construction and installation requirements, and relevant tests, for driving controls that allow vehicles to be driven by drivers with physical disabilities. All vehicles, as referred to in Australian Design Rules (ADRs) fall within the scope of this Standard.

Types of vehicle modifications covered by this Standard include mechanical and electromechanical systems for both primary and secondary driving controls.

NOTE Examples include hand-operated controls, steering wheel attachments, alternative steering systems and driver training brakes.

General information on the installation and use of adaptive motor vehicle controls is also provided in Appendix A.

2 Normative references

The following documents are referred to in this Standard:

AS 1065, *Non-destructive testing — Ultrasonic testing of carbon and low alloy steel forgings*

AS 1171, *Methods for magnetic particle testing of ferromagnetic products and components*

AS 2062, *Non-destructive testing — Penetrant testing of products and components*

AS 2084, *Non-destructive testing — Eddy current testing of metal tubes*

AS 2177, *Non-destructive testing — Radiography of welded butt joints in metal*

AS 2207, *Non-destructive testing — Ultrasonic testing of fusion welded joints in carbon and low alloy steel*

AS 60529, *Degrees of protection provided by enclosures (IP Code)*

AS/NZS 3696.19, *Wheelchairs, Part 19: Wheeled mobility devices for use as seats in motor vehicles (ISO 7176-19:2008 MOD)*

AS/NZS 10542.1, *Technical systems and aids for people with disability — Wheelchair tiedown and occupant-restraint systems, Part 1: Requirements and test methods for all systems (ISO 10542-1:2012, MOD)*

AS/NZS ISO 16840.4, *Wheelchair seating, Part 4: Seating systems for use in motor vehicles*

AS EN 12183, *Assistive products for persons with disability — General requirements and test methods*

ISO 2954, *Mechanical vibration of rotating and reciprocating machinery — Requirements for instruments for measuring vibration severity*

ISO 5348, *Mechanical vibration and shock — Mechanical mounting of accelerometers*

ISO 14971, *Medical devices — Application of risk management to medical devices*

ADR 21/00, *Australian Design Rule 21/00 — Instrument Panel*

ADR 22/00, *Australian Design Rule 22/00 — Head Restraints*

ADR 31/01, *Australian Design Rule 31/01 — Brake Systems for Passenger Cars*

ADR 33/00, *Australian Design Rule 33/00 — Brake Systems for Motorcycles and Mopeds*