AS 1636.1—1996
ISO 3463:1989
ISO 5700:1989

Australian Standard®

Tractors—Roll-over protective structures—Criteria and tests

Part 1: Conventional tractors

[ISO titles:
Wheeled tractors for agriculture and forestry; protective structures; dynamic test method and acceptance conditions
Wheeled tractors for agriculture and forestry; protective structures; static test method and acceptance conditions]

This Australian Standard was prepared by Committee ME/65, Agricultural Tractors and Machinery. It was approved on behalf of the Council of Standards Australia on 21 September 1995 and published on 5 January 1996.

The following interests are represented on Committee ME/65:

Department of Primary Industries, Qld
Health and Safety Organisation
N.S.W. Agriculture
Safety Institute of Australia
Tractor and Machinery Association of Australia
University of Melbourne
WorkCover Authority of New South Wales

This Standard was issued in draft form for comment as DR 94382.

AS 1636.1—1996

Australian Standard®

Tractors—Roll-over protective structures—Criteria and tests

Part 1: Conventional tractors

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140
ISBN 0 7337 0130 2

PREFACE

This Standard was prepared by the Standards Australia Committee ME/65 on Agricultural Tractors and Machinery to supersede AS 1636—1984, *Agricultural wheeled tractors—Roll-over protective structures—Criteria and tests.* It lays down the performance requirements under specified test methods for roll-over protective structures (ROPS) intended to protect drivers in the event of a tractor overturning.

During its work, the Committee considered adopting ISO 3463, *Wheeled tractors for agriculture and forestry—Protective structures—Dynamic test method and acceptance conditions* and ISO 5700, *Wheeled tractors for agriculture and forestry—Protective structures—Static test method and acceptance conditions*. However, these International Standards provide only a method for testing ROPS and do not meet all the needs for Australia, in particular the need to fit ROPS to older tractors. The Committee believed that this constitutes a legitimate reason to vary from the International Standard as set out under Article 2.4 of the GATT TBT Code.

The Committee also considered the use of a single ROPS design, which would have provided a deemed-to-comply solution as a means of enabling the owners of a number of older tractors to benefit from the added safety afforded by ROPS. However, the differences between tractors and the ways in which the ROPS would be installed on tractors, made this impractical. It is perhaps not fully realized that the ROPS undergoes plastic deformation during a roll-over accident. Nonetheless, the facility for installing a ROPS to a tractor for which it was not originally designed and tested is provided for in Clause 1.8.

Changes to this edition include the use of analytical methods to determine design suitability. In this way, ROPS may be designed for (and installed on) older tractors, so affording equivalent protection to owners and drivers of tractors.

The seat index point replaces the seat reference point in Part I used in previous editions to minimize any departure from International Standards.

The Standard also recognizes that some tractors designed for agricultural purposes are in fact used as earthmoving machinery. The differences in protection and indeed the test methods for ROPS used on earthmoving equipment as opposed to the requirements of this Standard are minimal for tractor masses up to 12 to 15 tonnes. Therefore, ROPS tested in accordance with AS 2294 are now deemed to be suitable for use with agricultural tractors.

Similarly ROPS tested to AS 1636 can be used in earthmoving applications, but to clarify the performance equivalence, the labelling has been modified to show the maximum equivalent mass for the tractor as required on a particular mass of tractor.

These changes constitute departures from the International Standards dealing with ROPS, i.e. ISO 3463 and ISO 5700. However, ROPS complying with the International Standards and those other Standards listed in Clause 1.6 are deemed to comply with this Australian Standard.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

Originated as AS N70—1969 (being endorsement of BS 4063—1966 without amendment).
Previous edition AS 1636—1984.
Revised and redesignated AS 1636.1—1996.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard

for

Tractors—Roll-over protective structures—Criteria and tests

Part 1: Conventional tractors

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies procedures for the evaluation of roll-over protective structures (ROPS) for the protection of drivers of tractors. It also sets out test procedures and minimum performance criteria for those structures.

This Standard applies to driver-controlled tractors having a track width generally greater than 1150 mm and is not intended to apply to machinery whose primary purpose is earth-moving machinery as defined in AS 2294. The Standard describes two different methods of testing a ROPS. A dynamic test, which may be applied to tractors having a mass of not less than 800 kg and not greater than 6000 kg; and a static test, which may be applied to tractors having a mass of not less than 560 kg and not greater than 15 000 kg are described.

The Standard does not apply to narrow-track tractors or high clearance tractors. Nor does it apply to certain forestry machines such as forwarders and other machines dealt with in other Standards.

NOTE: A ROPS is a structure whose primary purpose is to reduce the possibility of an operator from being crushed or otherwise injured in the event of a tractor rolling over. Wearing a seat belt in conjunction with using a ROPS, may provide additional protection in the event of a tractor rolling over. Seat belts should comply with AS/NZS 2596 or SAEJ 386.

1.2 OBJECTIVE The objective of this Standard is to enable designers and manufacturers of ROPS to verify the design and performance of ROPS and to thus minimize the risks to the health and safety of drivers of tractors involved in a roll-over accident.

1.3 APPLICATION This Standard is intended for use by designers, manufacturers and testers of ROPS for use on tractors, who are concerned with the design verification of those ROPS.

1.4 REFERENCED DOCUMENTS The documents below are referred to in this Standard:

AS
2294 Earth-moving machinery—Protective structures
2953 Earth-moving machinery—Human dimensions
2953.3 Part 3: Seat index point
3569 Steel wire ropes

AS/NZS
2596 Seat belts for use in motor vehicles