AS 4742—2003
ISO 9533:1989

Australian Standard™

Earth-moving machinery—Machine-mounted forward and reverse audible warning alarm—Sound test method

Standards Australia

This Australian Standard was prepared by Committee ME-063, Earth-moving Equipment. It was approved on behalf of the Council of Standards Australia on 8 August 2003 and published on 18 September 2003.

The following are represented on Committee ME-063:

Austroads

Australian Industry Group

Construction and Mining Equipment Association of Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-063, Earth-moving Equipment.

This Standard is identical with and has been reproduced from ISO 9533:1989, *Earth-moving machinery—Machine-mounted forward and reverse audible warning alarm—Sound test method.*

The objective of this Standard is to assist designers and manufacturers of earth-moving machinery in reducing the risks to the health and safety of those persons working with or otherwise near earth-moving machinery.

As this Standard is reproduced from an International Standard, the following applies.

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text, 'this International Standard' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
4872	Acoustics—Measurement of airborne noise emitted by construction equipment intended for outdoor use—Method for determining compliance with noise limits	—	
5353	Earth-moving machinery, and tractors and machinery for agriculture and forestry—Seat index point	2953 2953.3	Earth-moving machinery—Human dimensions Part 3: Seat index point
6081	Acoustics—Noise emitted by machinery and equipment—Guidelines for the preparation of test codes of engineering grade requiring noise measurements at the operator's or bystander's position	—	
6165	Earth-moving machinery—Basic types—Vocabulary	2951 2951.1	Earth-moving machinery—Nomenclature Part 1: Basic types
6393	Acoustics—Measurement of airborne noise emitted by earth-moving machinery—Method for determining compliance with limits for exterior noise—Stationary test condition	2012 2012.1	Acoustics—Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors—Stationary test condition Part 1: Determination of compliance with limits for exterior noise
6394	Acoustics—Measurement of airborne noise emitted by earth-moving machinery—Operator's position—Stationary test condition	2012.2	Part 2: Operator's position
IEC			
651	Sound level meters	1259 1259.1	Acoustics—Sound level meters Part 1: Non-intregrating

The term ‘informative’ has been used in this Standard to define the application of the annex or appendix to which it applies. An ‘informative’ annex or appendix is only for information and guidance.

NOTES

AUSTRALIAN STANDARD

1 Scope

This International Standard outlines the procedures and sets the criteria necessary to evaluate the audible performance of alarms mounted on earth-moving machines intended to warn personnel of the potential hazard of the machine moving under its own power, either forward or in reverse. The tests are carried out on a stationary machine.

Alarm performance on the machine is a function of alarm design, conditions, voltage at the alarm, and placement on the machine with respect to machine components. This procedure verifies that the combination of factors produces an audible alarm.

This International Standard applies to earth-moving machinery as defined in ISO 6165.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4872 : 1978, *Acoustics — Measurement of airborne noise emitted by construction equipment intended for outdoor use — Method for determining compliance with noise limits.*

ISO 5353 : 1978, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point* (as amended in 1981 and 1984).

ISO 6081 : 1986, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the preparation of test codes of engineering grade requiring noise measurements at the operator's or bystander's position.*

ISO 6165 : 1987, *Earth-moving machinery — Basic types — Vocabulary.*

ISO 6393 : 1985, *Acoustics — Measurement of airborne noise emitted by earth-moving machinery — Method for determining compliance with limits for exterior noise — Stationary test condition.*

ISO 6394 : 1985, *Acoustics — Measurement of airborne noise emitted by earth-moving machinery — Operator's position — Stationary test condition.*

IEC 651 : 1979, *Sound level meters.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 4872 and ISO 6081, and the following definitions, apply.

3.1 machine reference box : Imaginary rectangular box that would just fit over the base machine, excluding all equipment and attachment items such as buckets, dozers, backhoes, rippers and booms.

3.2 forward and reverse warning alarm : Machine-mounted alarm intended to warn personnel of the potential hazard of the machine moving under its own power, without undue discomfort or irritation to the machine operator.

4 Apparatus

4.1 Sound level meter with condenser microphone, or its equivalent in accuracy, stability and frequency response. The external diameter of the microphone shall not exceed 13 mm, so as to reduce possible directivity errors. Both the microphone and its cable shall be chosen so that the combined sensitivity does not change significantly over the temperature range encountered during the tests. The instrumentation shall meet the Type 1 requirements of IEC 651.

4.2 Acoustical calibrator, accurate to within ± 0,5 dB.

4.3 Windscreen : this may be required under some test conditions. Otherwise its use is optional providing that it does not affect the A-weighted sound level of the source being measured by more than ± 0,5 dB under zero wind speed conditions.

4.4 Anemometer or other device for measurement of ambient wind speed and direction, accurate to within ± 10 % at the highest recommended wind speed.

4.5 Engine rotational frequency indicator, accurate to within ± 2 % of the indicated rotational frequency.