AS ISO 18738—2005

Australian Standard™

Lifts (elevators)—Measurement of lift ride quality

This Australian Standard was prepared by Committee ME-004, Lift Installations. It was approved on behalf of the Council of Standards Australia on 12 September 2005.
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The following are represented on Committee ME-004:

Association of Consultants in Access Australia
Association of Independent Lift Companies
Australasian Fire Authorities Council
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Elevator Association
Australian Industry Group
Australian Institute of Building Surveyors
Department for Administrative and Information Services (South Australia)
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Australian Standard™

Lifts (elevators)—Measurement of lift ride quality

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-004, Lift Installations.

This Standard is identical with and reproduced from ISO 18738:2003, *Lifts (elevators)—Measurement of lift ride quality.*

The objective of this Standard is to provide designers, manufacturers and users with uniform methods of measuring, processing and expressing vibration and noise signals that comprise lift ride quality.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number appears on the cover and title page while the international Standard number appears only on the cover.

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

(c) A full point substitutes for a comma when referring to a decimal marker.

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

Reference to International Standard		*Australian Standard*	
ISO		AS	
2041	Vibration and shock—Vocabulary	2606	Vibration and shock—Vocabulary
2631-1	Mechanical vibration and shock—Evaluation of human exposure to whole-body vibration Part 1: General requirements	2670 2670.1	Evaluation of human exposure to whole-body vibration Part 1: General requirements
5805	Mechanical vibration and shock—Human exposure—Vocabulary	3658	Vibration and shock—Mechanical vibration and shock affecting humans—Vocabulary
8041 and Amdt 1	Human response to vibration—Measuring instrumentation	—	
IEC			
60651	Sound level meters	1259 1259.1	Acoustics—Sound level meters Part 1: Non-integrating
60804	Integrating-averaging sound level meters	1259.2	Part 2: Integrating—Averaging
GUM	Guide to the expression of uncertainty in measurement. BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML[1]		

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INTRODUCTION

The objective of this International Standard is to encourage industry-wide uniformity in the definition, measurement, processing and expression of vibration and noise signals that comprise lift ride quality.

The aim of such uniformity is to benefit lift industry clients by reducing variability in the results of lift ride quality measurements caused by differences in the methods of acquiring and quantifying the signals.

This International Standard is intended to be referred to by those parties interested in

a) developing manufacturing specifications and calibration methods for instrumentation,

b) defining the scope of the specifications for lift ride quality in contracts, and

c) measuring lift ride quality in accordance with an International Standard.

It is intended to produce lift ride quality measurements which

a) are simple to understand without specialized knowledge of noise and vibration analysis,

b) correlate well with human response to ensure plausibility, and

c) are accountable via calibration procedures which are traceable to national standards.

This International Standard refers to ISO 8041 and IEC 60651 and has drawn significantly on the considerable body of research implicit in these standards. However, several special challenges drawing on additional research and development were also recognized.

Experience in the lift industry indicates that evaluation of vibration in terms of peak-to-peak levels is of particular relevance to passenger comfort. It was considered necessary for this International Standard to provide a dual form of expression, quantifying both the maximum peak-to-peak and A95 peak-to-peak vibration levels.

To minimize the adverse effects of external influences unique to the lift industry, it was considered necessary to prescribe the prerequisites and method of the measurement process as well as the relevant boundaries (start and end points) over which each signal is quantified.

It was also considered necessary to analyse vertical vibration and vertical motion control separately in order to correlate with human response.

Finally, through the inclusion of algorithms amenable to digital programming, this International Standard reflects the commercial need in the lift industry for instrumentation capable of rapid automatic computation of the required signal quantities. Analog systems may be used providing that the requirements of this International Standard are met.

AUSTRALIAN STANDARD

Lifts (elevators)—Measurements of lift ride quality

1 Scope

This International Standard specifies requirements and methodology for the measurement and reporting of lift ride quality during lift motion. It does not specify acceptable or unacceptable ride quality.

NOTE Lift performance parameters are often referenced in conjunction with lift ride quality. Parameters relevant to lift performance include jerk and acceleration. This International Standard defines and uses performance parameters where they are integral to the evaluation of ride quality.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2041:1990, *Vibration and shock — Vocabulary*

ISO 2631-1:1997, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*

ISO 5805:1997, *Mechanical vibration and shock — Human exposure — Vocabulary*

ISO 8041:1990 and Amd.1:1999, *Human response to vibration — Measuring instrumentation*

IEC 60651:2001, *Sound level meters*

IEC 60804:2000, *Integrating-averaging sound level meters*

GUM:1993, *Guide to the expression of uncertainty in measurement.* BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML[1)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2041, ISO 5805, IEC 60804 and the following apply.

3.1
acceleration
rate of change of *z*-axis velocity, attributed to lift motion control

NOTE It is expressed in metres per second squared (m/s^2).

1) This was corrected and reprinted in 1995.