BS ISO 18738-1:2012

BSI Standards Publication

Measurement of ride quality

Part 1: Lifts (elevators)

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National foreword

This British Standard is the UK implementation of ISO 18738-1:2012.

The UK participation in its preparation was entrusted to Technical Committee MHE/4, Lifts, hoists and escalators.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Part 1:
Lifts (elevators)

Mesure de la qualité de déplacement —

Partie 1: Ascenseurs

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 18738-1 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators, passenger conveyors*.

ISO 18738 consists of the following parts, under the general title *Measurement of ride quality*:

— *Part 1: Lifts (elevators)*

— *Part 2: Escalators and moving walks*

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Introduction

The objective of this part of ISO 18738 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 part of ISO 18738 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 part of ISO 18738 refers to ISO 8041 and IEC 61672 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 part of ISO 18738 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 part of ISO 18738 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 provided that the requirements of this part of ISO 18738 are met.

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Measurement of ride quality —

Part 1:
Lifts (elevators)

1 Scope

This part of ISO 18738 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 part of ISO 18738 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 2041:2009, *Vibration and shock — Vocabulary*

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

ISO 8041:2005, *Human response to vibration — Measuring instrumentation*

IEC 61672-1:2002, *Electroacoustics — Sound level meters — Part 1: Specifications*

IEC 61672-2:2003, Electroacoustics — Sound level meters — Part 2: Pattern Evaluation Tests

ISO 80000-8:2007, *Quantities and units — Part 8: Acoustics*

ISO/IEC Guide 98:1993, Guide to the expression of uncertainty in measurement (GUM)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2041, ISO 5805, IEC 61672, and ISO 80000-8 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).

3.2
vibration
variation with time of the magnitude of acceleration, when the magnitude is alternately greater and smaller than the average acceleration of the lift when no lift motion is present

NOTE 1 It is expressed in metres per second squared (m/s^2).

NOTE 2 The deprecated unit Gal (Galileo) is sometimes used: 1 Gal = 0,01 m/s^2.

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