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Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	4
3 Terms and definitions	4
3.A Test system	6
4 Kinds of tests	6
5 Order of testing	7
6 Information related to test procedures	8
6.1 Method of mounting and orientation of equipment under test	8
6.2 Reference and check points	8
6.3 Mechanical state and functioning during test	9
6.4 Reproducibility for random vibration tests	10
6.5 Measuring tolerances	11
6.6 Recovery	11
7 Initial measurements and preconditioning	11
8 Functional vibration test conditions	12
8.1 Excitation conditions and frequency range	12
8.2 Duration of functional vibration tests	13
8.3 Functioning during test	13
9 Simulated long-life vibration test conditions	13
9.1 Excitation conditions and frequency range	13
9.2 Duration of simulated long-life vibration test	14
10 Shock testing conditions	14
10.1 Pulse shape and tolerance	14
10.2 Velocity changes	15
10.3 Mounting	15
10.4 Repetition rate	15
10.5 Peak acceleration, pulse shape and direction	15
10.6 Number of shocks	15
10.7 Functioning during test	15
11 Transportation and handling	16
12 Final measurements	16
13 Acceptance criteria	16

14	Report	16
15	Test certificate	17
16	Processing of equipment under test	17
Annex A (informative)	Explanation of service measurements, measuring positions, methods of recording service data, summary of service data, and method used to obtain random test levels from acquired service data	24
Annex B (informative)	Figure identifying general location of equipment on railway vehicles and their resulting test category	31
Annex C (informative)	Example of a type test certificate	32
Annex D (informative)	Guidance for calculating r.m.s. values from ASD values or levels	33
Annex JA (normative)	Sinusoidal vibration test method	35
Annex JB (normative)	Shock test method assuming longitudinal shock	44
Annex JC (informative)	Guideline for estimating design conditions from random vibration test data	47
Annex JD (informative)	Reference information for understanding the random vibration test and selecting the testing machine	56
Annex JE (informative)	Comparison table between JIS and corresponding International Standard	72

Foreword

This Japanese Industrial Standard has been revised by the Minister of Land, Infrastructure, Transport and Tourism through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Association of Rolling Stock Industries (JARI)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS E 4031** : 2012 is replaced with this Standard.

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Rolling stock equipment — Vibration and shock tests

Introduction

This Japanese Industrial Standard is based on **IEC 61373** that was issued as the second edition in 2010 with some modifications of the technical content to suit the actual circumstances in Japan.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JE. Annex JA to Annex JD are unique to **JIS** and not given in the corresponding International Standard.

1 Scope

This Standard specifies the requirements for vibration tests and shock tests of equipment to be fitted onto railway vehicles (hereafter referred to as equipment).

The tests contained within this Standard are specifically aimed at demonstrating the ability of the equipment under test to withstand the type of environmental vibration conditions normally expected for railway vehicles. In order to achieve the best representation possible, the values quoted in this Standard have been derived from actual service measurements submitted by various bodies from around the world.

This Standard is not intended to cover self-induced vibrations as these will be specific to particular applications.

Engineering judgement and experience is required in the execution and interpretation of this Standard.

This Standard is suitable for design and validation purposes; however, it does not restrict the use of other methods (such as sine sweep), which may be used to ensure a predetermined degree of mechanical and operational confidence, and therefore Annex JA and Annex JB have been added.

The test levels to be applied to the equipment under test are dictated only by its location on the train (i.e. axle, bogie or car body).

It should be noted that these tests may be performed on prototypes in order to gain design information about the product performance under random vibration. However, for test certification purposes the tests have to be carried out on equipment taken from normal production.

Also, the equipment being actually tested shall be referred to as “equipment under test”.

The operating rolling stock is essentially exposed to vibration and shock conditions. This Standard specifies the test requirements for the equipment mounted and used in railway vehicles. To gain assurance that the quality of the equipment is acceptable, it has to withstand tests of reasonable duration that simulate the service conditions seen throughout its expected