

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS T 8114 : 2007

(JSAA/JSA)

Vibration isolation gloves

ICS 13.340.40

Reference number : JIS T 8114 : 2007 (E)

PROTECTED BY COPYRIGHT

T 8114 : 2007

Date of Establishment: 1987-10-15

Date of Revision: 2007-05-25

Date of Public Notice in Official Gazette: 2007-05-25

Investigated by: Japanese Industrial Standards Committee

Standards Board

Technical Committee on Protective Equipment for
Occupational Safety

JIS T 8114 : 2007, First English edition published in 2007-10

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

MT

PROTECTED BY COPYRIGHT

 **Documents**
Document Sharing Hub

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references.....	1
3 Terms and definitions	2
4 Symbols and abbreviations.....	2
5 Quality.....	3
5.1 Appearance	3
5.2 Criteria for antivibration gloves.....	3
6 Construction	3
7 Material	3
8 Appearance test	3
9 Measuring principle and equipment.....	3
9.1 General principle and setup	3
9.2 Measuring equipment.....	5
9.3 Vibration excitation system	6
9.4 Measurement conditions and procedure.....	7
9.5 Evaluation of results.....	11
10 Inspection	12
11 Marking	12
Annex A (normative) Mathematical definition of vibration test signals.....	13
Annex B (informative) Example of handle with gripping force measuring system.....	14
Annex C (informative) Third-octave band spectra of vibration test signals	15
Annex JA (informative) Comparison table between JIS and corresponding International Standard.....	17

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Safety Appliances Association (JSAA)/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 T 8114 : 1987** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Ministers and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Vibration isolation gloves

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 10819 published in 1996 with some modifications of the technical contents in order to make a product standard.

The portions given sidelines and/or dotted underlines in this Standard are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the vibration isolation gloves (hereafter referred to as “gloves”) to attenuate the vibration (in the frequency range from 31.5 Hz to 1 250 Hz) transmitted to gloved hands of workman from tools, machine, etc. at the workshop of mining, forestry, civil engineering and construction industry, manufacturing industry, etc.

NOTE : The International Standard corresponding to this Standard is as follows.

ISO 10819 : 1996 *Mechanical vibration and shock—Hand-arm vibration—Method for the measurement and evaluation of the vibration transmissibility of gloves at the palm of the hand* (MOD)

In addition, symbols, MOD, which denote the degree of correspondence, in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0153 *Glossary of terms used in mechanical vibration and shock*

NOTE : Corresponding International Standard : ISO 2041 *Vibration and shock—Vocabulary* (MOD)

JIS B 7761-1 *Hand-transmitted vibration—Part 1: Measuring instrumentation*

NOTE : Corresponding International Standard : ISO 8041 *Human response to vibration—Measuring Instrumentation* (MOD)

JIS B 7761-3 *Hand-transmitted vibration—Part 3: General requirements for measurement and evaluation*

NOTE : Corresponding International Standard : ISO 5349-1 *Mechanical vibration—Measurement and evaluation of human exposure to hand-transmitted vibration—Part 1 : General requirements* (IDT)

JIS C 1514 *Electroacoustics—Octave-band and fractional-octave-band filters*

NOTE : Corresponding International Standard : **IEC 61260** *Electroacoustics—Octave-band and fractional-octave-band filters* (IDT)

JIS Z 8131 *Mechanical vibration and shock—Human exposure—Vocabulary*

NOTE : Corresponding International Standard : **ISO 5805** *Mechanical vibration and shock—Human exposure—Vocabulary* (MOD)

3 Terms and definitions

For the purpose of this Standard, the definitions given in **JIS B 0153**, clause 3 of **JIS B 7761-3** and **JIS Z 8131** and the following definition apply.

3.1 transmissibility

the ratio of the accelerations measured at the surface of the hand and at the reference point

Transmissibility values greater than 1 indicate that the glove amplifies the vibration. Values lower than 1 indicate that the glove attenuates the vibration.

4 Symbols and abbreviations

The following symbols and abbreviations are used:

a_w r.m.s. frequency-weighted acceleration, measured by means of a weighting filter or calculated from acceleration spectrum (see **JIS B 7761-1** and **JIS B 7761-3**)

a_{ws} r.m.s. frequency-weighted acceleration for vibration spectrum s ($s = M$ or H , see **9.4.2**)

R subscript used to denote measurements taken at the reference point, i. e. at the handle

P subscript used to denote measurements taken at the palm of the hand

b subscript used to denote measurements taken with “bare hand”, i. e. without glove

g subscript used to denote measurements taken with “gloved hand”, i. e. between glove and hand.

Examples of combined subscripts:

a_{wMPg} weighted acceleration for vibration spectrum M , measured at the palm of the hand with glove

TR_{sb} transmissibility for vibration spectrum s measured with bare hand
($TR_{sb} = a_{wsPb} / a_{wsRb}$)

TR_{sg} transmissibility for vibration spectrum s measured with gloved hand
($TR_{sg} = a_{wsPg} / a_{wsRg}$)

TR_s corrected vibration transmissibility of glove for vibration spectrum s
($TR_s = TR_{sg} / TR_{sb}$)

$\overline{TR}_s$ mean corrected transmissibility of glove for vibration spectrum s ($s = M$ or H , see **9.5.1**).

5 Quality

5.1 Appearance

A glove shall be free of flaws, air-bubbles, spots, blot or other faults in use.

5.2 Criteria for antivibration gloves A glove shall not be considered as “antivibration glove” according to clause 9 if it does not fulfill both of the following criteria:

$$\overline{TR}_M < 1.0 \text{ and } \overline{TR}_H < 0.6$$

NOTE 1 The fulfilment of these criteria does not imply that the use of such gloves removes the hazard of vibration exposure. Moreover, a glove shall only be considered as “antivibration glove” according to this Standard if the fingers of the glove have the same properties (materials and thickness) as the part of the glove covering the palm of the hand.

NOTE 2 However, if such gloves fulfill the requirements regarding vibration transmissibility, they may have a beneficial effect when used in situations involving no contact between fingers and vibrating surface.

6 Construction

A glove shall be constructed using antivibration materials at the palm of the hand.

7 Material

Materials to be used for gloves shall have good strength, elasticity and thermal characteristic. In addition, portions of a glove covering the palm and fingers shall have the same characteristics (materials and thickness).

8 Appearance test

For an appearance test, check visually that a product as a specimen is free of flaws, air-bubbles, spots or blot from an anterior view under proper lighting condition.

9 Measuring principle and equipment

9.1 General principle and setup

The method uses a vibration excitation system (“shaker”) equipped with a special handle (see Annex B) to measure the gripping force and a device for measuring the feed force.

The vibration in the direction of the excitation is measured at two points simultaneously: at the surface of the handle and — by means of an adaptor, as shown in figure 2, containing an accelerometer — between hand and glove, i. e. inside the glove. In order to compensate for the frequency response of the adaptor, the vibration transmissibility of the glove is calculated as the difference in vibration transmissibility from handle to hand with and without glove.

The measuring setup for measuring the vibration transmissibility is shown in figure 1.

The values of the gripping force and the feed force have to be displayed continuously, to enable the operator to adjust them to the required values.

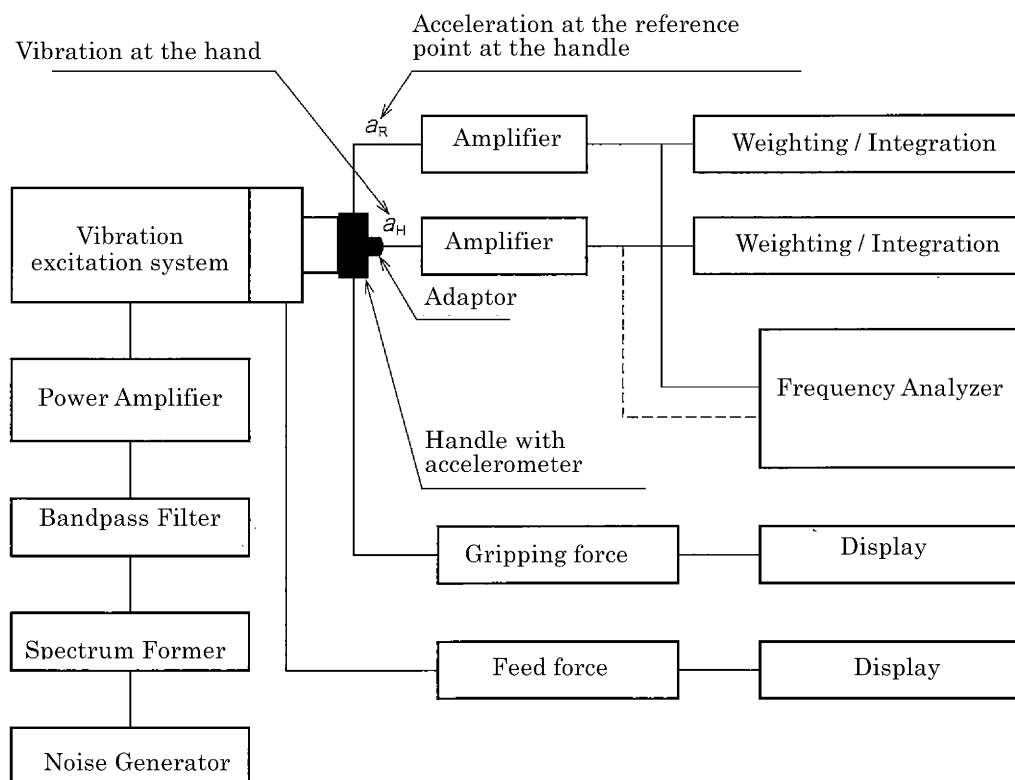
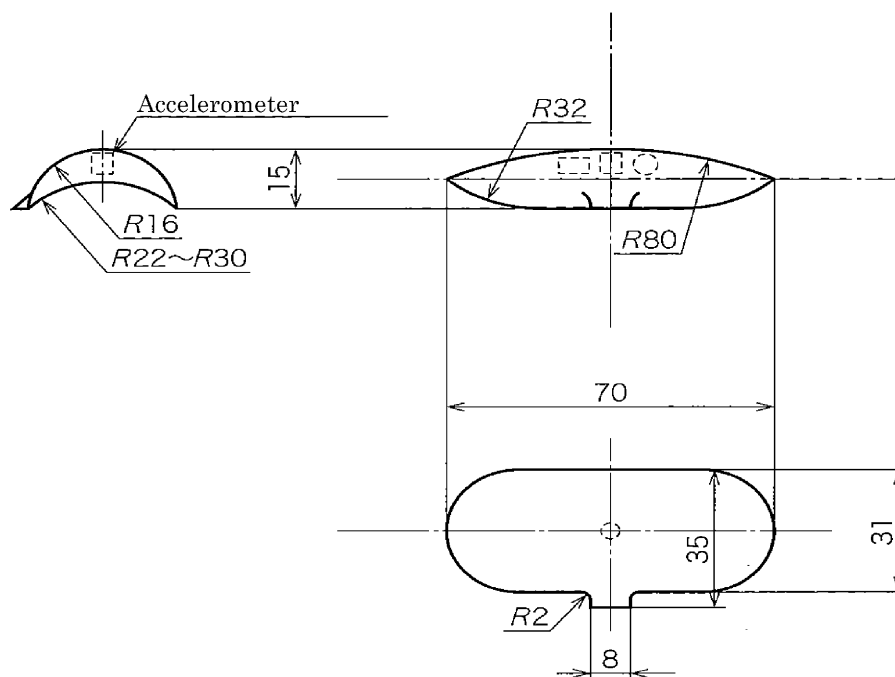


Figure 1 Schematic diagram for measurement of vibration transmissibility

Dimension in mm
All dimensions ± 0.5 mm



NOTE : In accordance with first angle projection.

Figure 2 Adaptor for holding accelerometer in the palm of the hand