



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 7738 : 2020

(JTM/JSA)

**Calibration and verification of helical
compression and extension springs
testing machines**

ICS 17.100 ; 21.160

Reference number : JIS B 7738 : 2020 (E)

PROTECTED BY COPYRIGHT

11 S

B 7738 : 2020

Date of Establishment: 1984-11-01

Date of Revision: 2020-11-20

Date of Public Notice in Official Gazette: 2020-11-20

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area

JIS B 7738 : 2020, First English edition published in 2021-04

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

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

© JSA 2021

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

HT/HN

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and definitions	2
5 General inspection and structure of testing machine	4
5.1 General inspection	4
5.2 Structure	4
6 Calibration of the force-measuring system of the testing machine	4
6.1 General	4
6.2 Determination of the resolution	5
6.3 Relative resolution of the force indicator	6
6.4 Calibration method	6
6.5 Assessment of the force indicator	10
7 Class of the testing machine	11
8 Calibration of length measuring instrument	12
8.1 General	12
8.2 Calibration of instrument to read the length by main scale and vernier scale	12
8.3 Calibration of instrument to digitally indicate length or instrument to point length on recording paper	12
8.4 Error of measurement by instrument to digitally indicate length or instrument to point length on recording paper	12
8.5 Verification of variation of length measuring instrument by loading	13
9 Calibration report and/or verification report	13
10 Intervals between calibrations	14
Annex A (normative) General inspection of testing machine	15
Annex B (informative) Inspection of loading platens	16

Foreword

This Japanese Industrial Standard has been revised by 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 The Japan Testing Machine Association (JTM)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS B 7738**:2001), which has been technically revised.

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

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, published patent application or utility model rights.

Calibration and verification of helical compression and extension springs testing machines

Introduction

This Japanese Industrial Standard specifies the data of both “force” and “length” in the loading process of helical compression and extension springs, which are important elements for the basic performance evaluation of the said springs, and the calibration and verification methods for both of them.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies the method for calibration and verification of the force-measuring system and length measuring instrument of the compression and tension testing machines (hereafter referred to as testing machines) used for evaluation of compressive and tensile characteristics of helical compression and extension springs.

This Standard addresses the static calibration and verification of the force-measuring systems and length measuring instruments. The calibration values are not necessarily valid for high-speed or dynamic testing applications.

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 7506 *Gauge blocks*

JIS B 7517 *Vernier, dial and digital height gauges*

JIS B 7728 *Calibration of force-proving instruments used for the verification of uniaxial testing machines*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1

calibration

operation that establishes the relationship between the indicated value of the force indicator of the testing machine and the reference force value, and between the indicated value of the length indicator of the testing machine and the reference length value

3.2

verification