JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 1811 : 2018

(JCA/JSA)

Fatigue test method for transmission precision roller chains and leaf chains

ICS 21.220.30
Reference number : JIS B 1811 : 2018 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 2008-04-20

Date of Revision: 2018-03-20

Date of Public Notice in Official Gazette: 2018-03-20

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Machine Elements

JIS B 1811 : 2018, First English edition published in 2018-11

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 2018
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 KK/HN

PROTECTED BY COPYRIGHT

Contents

Page

Introduction 1

1 Scope 1

2 Normative references 1

3 Symbols, terms and definitions 2

4 Principle 3

5 Test equipment 3
5.1 Testing machine 3
5.2 Test fixtures 4

6 Specimens 4
6.1 Free links of specimen 4
6.2 Specimen condition 5

7 Force setting 5
7.1 Minimum force 5
7.2 Maximum force 5
7.3 Test force 5
7.4 Force application condition 6

8 Conformity test 6
8.1 Purpose 6
8.2 Endurance 6
8.3 Minimum test force 6
8.4 Maximum test force 6
8.5 Number of tests 7
8.6 Acceptance 7

9 Finite life test 7
9.1 Purpose 7
9.2 Summary 7
9.3 Test and analysis procedure 7
9.4 Determination of step size 7

10 Staircase test 8
10.1 Purpose 8
10.2 Summary 8
10.3 Endurance 8
10.4 Required number of data 8
10.5 Staircase test data analysis 8

11 Combined test 10

PROTECTED BY COPYRIGHT

11.1 Purpose ····· 10
11.2 Summary ····· 10
11.3 Test procedure ····· 10
11.4 Analysis procedure ····· 11
11.5 *R-F-N* curve ····· 12

12 Report of test results ····· 13
12.1 General matters ····· 13
12.2 Test chain information ····· 13
12.3 Test equipment and procedures ····· 13
12.4 Test results ····· 13
12.5 Example of test report and graph ····· 14

Annex A (informative) Estimation of fatigue strength to chain length ····· 18

Annex B (informative) Survival test with abridged Probit analysis ····· 24

Annex C (informative) Justification for adding one step size to minimum fatigue limit in staircase analysis ····· 28

Annex D (informative) Extrapolating fatigue strength from 3×10^6 to 10^7 cycles ····· 31

Annex E (informative) Report on fatigue test results ····· 35

Annex F (informative) Finite life testing and data analysis ····· 42

Annex JA (informative) Comparison table between JIS and corresponding International Standard ····· 47

PROTECTED BY COPYRIGHT

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 Japan Chain Association (JCA)/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 B 1811**:2008 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 patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

PROTECTED BY COPYRIGHT

Fatigue test method for transmission precision roller chains and leaf chains

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 15654** : 2015, Edition 2, with some modifications of the technical contents to conform to the usage situations unique to 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 JA.

1 Scope

This Standard specifies the fatigue test method for transmission precision roller chains and leaf chains (hereafter referred to as chains). This Standard is applicable to the fluctuating tension type test of chains, made at room temperature with the force applied along the longitudinal axis of the chain. This Standard also specifies procedures for statistic analyses of the test results, and gives formats and elements for presenting the results of fatigue tests and analyses.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 15654 : 2015 *Fatigue test method for transmission precision roller chains and leaf chains* (MOD)

In addition, symbols 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 21-1**.

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 1801 *Short-pitch transmission precision roller chains and bush chains*

NOTE : Corresponding International Standard : ISO 606 : 2015 *Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets*

JIS B 1804 *Leaf chains*

NOTE : Corresponding International Standard : ISO 4347 : 2015 *Leaf chains, clevises and sheaves — Dimensions, measuring forces, tensile strengths and dynamic strengths*

PROTECTED BY COPYRIGHT