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(JMAA/JSA)

**Ball screws—Part 5: Static and  
dynamic axial load ratings and  
operational life**

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In the event of any doubts arising as to the contents,  
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## Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japan Machine Accessory Association (JMAA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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**JIS B 1192** series consists of the following parts under the general title “*Ball screws*”:

JIS B 1192-1 *Part 1: Vocabulary and designation*

JIS B 1192-2 *Part 2: Nominal diameters and nominal leads*

JIS B 1192-3 *Part 3: Acceptance conditions and test method*

JIS B 1192-4 *Part 4: Static axial rigidity*

JIS B 1192-5 *Part 5: Static and dynamic axial load ratings and operational life*

# Ball screws—Part 5: Static and dynamic axial load ratings and operational life

## Introduction

This Japanese Industrial Standard has been prepared based on **ISO 3408-5:2006**, Edition 1 by deleting part of material processing factor and preload factor in line with actual situations in Japan and with some modifications of the technical contents.

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 calculation schemes for basic static axial load rating, basic dynamic axial load rating and operational life of ball screws.

This Standard is applicable under the following preconditions:

- elastic deformation of ball and ball track;
- ball track has a minimum hardness of HRC 58;
- conformity  $f_{rs} > 0.5$  and  $f_{rn} > 0.5$ ;
- the quality of steel of which the ball screw is made is equivalent to that of ball bearing steel or similar steel alloys;
- lubrication recommended by ball screw suppliers is always provided.

NOTE 1 The calculations in this Standard have been based primarily on the following publications:

Prof. G. Lundberg, A. Palmgren. Acta Politechnica, mech. Eng. series Vol.I, No.3, Stockholm, Sweden. Part 7, 1947

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 3408-5:2006 *Ball screws—Part 5: Static and dynamic axial load ratings and operational life (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 reference

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

JIS B 1192-1 *Ball screws—Part 1: Vocabulary and designation*

NOTE Corresponding International Standard: ISO 3408-1 *Ball screws—Part 1: Vocabulary and designation*