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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 17587.1-2017

Ball screws -- Part 1: Vocabulary and designation

滚珠丝杠副 第1部分：术语和符号

(English Translation)

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Foreword

GB/T 17587 "ball screw vice" is divided into the following five sections.

- Part 1. Terms and symbols;
- Part 2. Nominal diameter and nominal lead metric series;
- Part 3. Acceptance conditions and acceptance inspection;
- Part 4. Axial static stiffness;
- Part 5. Axial static load and dynamic load rating and service life.

This section GB/T 17587 Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 17587.1-1998 "Ball Screws Part 1. Terms and Symbols", and GB/T 17587.1-1998 Compared to the main technical changes are as follows.

--- Removed "This standard applies to the ball screw machine used by the machine, ball screw used in other mechanical products should also refer to use. (See Chapter 1, Chapter 1 of the 1998 edition);

--- The "ball screw assembly is a rolling ball" This article is amended to Note 1, the original note 1 and the original note 2 is amended to note 2 and note 3.

And added standard tolerance class 0 and corresponding ITO standard tolerances in Note 3 (see 2.1.1, 1998 version 2.1);

- Removed "used to transmit power ball screw pair" (see 2.1.1.3, 1998 version 2.1.2);
- "Will be a lead ball screw with more than one pitch," revised "lead is an integral multiple of the ball screw pitch" (See 2.1.1.5, 1998 version 2.1.4);
- Deleted "(also without cycle device)" (see 2.1.3.1, 1998 version 2.3);
- Removed the term "circulating nut" (1998 version 2.3.2);
- Modify the definition of the term "ball circulation device" (see 2.3.3.3, 1998 edition 2.3.3);
- Added "carrying circle" terms and definitions (see 2.1.3.4);
- "Sealing parts in contact with ball screw" was revised to "contact with the ball screw sliding contact or non-contact parts" (see 2.1.3.5, 1998 version 2.3.4);
- Removed the 1998 version of "body" in the description of the two figures and in the definition of two terms "ball nut body" (see Figure 3 and Description of Figure 4, 2.2.2.7 and 2.2.2.8, Description of Figures.1998 and 1998, 3.2.3.4 and 3.2.3.5);
- Added "Note. The nominal diameter is between the pitch circle diameter and the ball screw thread outer diameter (including the equivalent pitch circle diameter or ball screw thread Grain outer diameter) "(see 2.2.1.2.1, 1998 edition 3.2.1);
- Removed "Note. The diameter of a garden is usually equal to the nominal diameter of a ball screw pair, with the exception of" (see 2.2.2.2, 1998 Version 3.2.2);
- Modify the term "nominal contact angle" to "contact angle" and delete the "ideal contact angle equal to 45 °" in the original definition (see 2.2.2.6, 1998 edition 3.2.3.3);
- Added "travel deviation" terms and definitions (see 2.2.2.10.3);
- The "stroke change" in the definition of note to note 2, before the original note, the note after the revisions were amended to Note 1, Note 3 (see 2. 2. 2. 11, 1998 edition 3.2.6);
- Modify the term "ball screw strength" to "buckling strength" (see 2.3.9, 1998 version 4.9).

This section uses the redrafted law Amendment uses ISO 3408-1:2006 "ball screw pair Part 1. Terms and Symbols." this section compared with ISO 3408-1:2006 there are technical differences and the reasons are as follows.

- Note 2.1 of ISO 3408-1:2006 "Note 3" has been modified. Retain the GB/T 17587.1-1998 handling do Act, an increase of 2 and 4 standard tolerance levels and the corresponding IT2 and IT4 standard tolerances. The main consideration is 2 and 4 the ball screw pair is widely used in our country.
- Modify the notes in 2.2.2.1 of ISO 3408-1-2006. Added "(including equal to pitch diameter or ball screw Thread diameter) ", the main consideration given to many domestic and foreign manufacturers of ball screw, its nominal diameter is equal to the pitch diameter or ball Screw thread diameter.

--- In the 2.2.2.4 "slot" of ISO 3408-1:2006, "slot" itself is not defined, whereas "2.2.2.4.1 Gothic slot" below and "2.2.2.4.2 Circular groove" The definition of two terms relates to the concept of "normal trochoidal raceway". For the narrative more intuitive and appropriate Combined with the expression of our country standard, this part reserves the treatment of GB/T 17587.1-1998. The title of 2.2.2.4 "trough" change is defined as "roller-shaped normal truncation"; "Gothic groove" and "arc-shaped groove" are respectively modified as "double circular arc raceway" and "single circle Arc raceway ", and increase their raceway normal truncated schematic (Figure 5), for this, the ISO 3408-1:2006 Figure 5 and Figure 6 to figures 6 and 7.

--- This section in 2.2.2.9.3, in order to facilitate the understanding and use of standards, to retain GB/T 17587.1-1998 approach, at in front of the definition of ISO 3408-1:2006, "Directives with direction-oriented requirements based on actual usage requirements Cheng. " this section also made the following editorial changes ISO 3408-1:2006.

--- The following changes in Figure 2. The figure to the ball nut body line into a solid line, and added the legend. "Note dotted line that non Must have components ";

--- 2.2.1 Figure 3 Ball nut diameter ϕD_1 marked place, marked by the ISO 3408-1:2006 ball nut method Blue, modified to mark the installation of the ball nut on the outer circle, and delete the flange of the graphics;

--- In Figure 3 below the description of the "nominal contact angle" was revised to "contact angle." this part is proposed by China Machinery Industry Federation.

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1 Scope

This section GB/T 17587 defines the ball screw pair (see Figure 1) terms, definitions and symbols.

This section applies to machine tool ball screw pair, the other can also refer to use.

Description.

1 --- Ball screw;

2 --- Ball;

3 --- ball nut.

Note that the actual design need not be consistent with the pictorial structure.

Figure 1 ball screw pair

2.1 Ball screw sub-components of the terms and definitions (see Figure 2)

Note: Dotted lines indicate nonessential components.

Figure 2 ball screw assembly