



SLOVENSKI STANDARD
oSIST prEN 1337-6:2018
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Konstruktivna ležišča - 6. del: Linijska in točkovna zasučna ležišča

Structural bearings - Part 6: Rocker bearings

Lager im Bauwesen - Teil 6: Kipplager

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Structural bearings - Part 6: Rocker bearings

Lager im Bauwesen - Teil 6: Kipplager

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 167.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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prEN 1337-6:2018 (E)**European foreword**

This document (prEN 1337-6:2018) has been prepared by Technical Committee CEN/TC 167 “Structural bearings”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1337-6:2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation 305/2011.

For relationship with EU Regulation 305/2011, see informative Annex ZA, which is an integral part of this document.

prEN 1337, *Structural bearings*, consist of the following 8 parts:

— *Part 1: General;*

— *Part 2: Sliding elements;*

— *Part 3: Elastomeric bearings;*

— *Part 4: Roller bearings;*

— *Part 5: Pot bearings;*

— *Part 6: Rocker bearings;*

— *Part 7: Spherical and cylindrical PTFE bearings;*

— *Part 8: Guide bearings and Restraint bearings.*

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The major technical changes are listed below:

- Complete technical and editorial revision of the document; it is not possible to list all implemented changes to this edition of EN 1337-6.

1 Scope

This document specifies rules for the design, testing and manufacture of point and line rocker bearings. It is applicable to rocker bearings manufactured from carbon steel or cast steel or cast iron or stainless steel.

This document will be used in conjunction with the relevant parts of this standard series.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 1337-1:2018, *Structural bearings — Part 1: General*

prEN 1337-2:2018, *Structural bearings — Part 2: Sliding elements*

prEN 1337-3:2018, *Structural bearings — Part 3: Elastomeric bearings*

prEN 1337-4:2018, *Structural bearings — Part 4: Roller bearings*

prEN 1337-5:2018, *Structural bearings — Part 5: Pot bearings*

prEN 1337-6:2018, *Structural bearings — Part 6: Rocker bearings*

prEN 1337-7:2018, *Structural bearings — Part 7: Spherical and cylindrical PTFE bearings*

prEN 1337-8:2018, *Structural bearings — Part 8: Guide bearings and Restraint bearings*

EN 1993 (all parts), *Eurocode 3: Design of steel structures*

EN 10025 (all parts), *Hot rolled products of structural steels*

EN 10083-1, *Steels for quenching and tempering — Part 1: General technical delivery conditions*

EN 10083-2, *Steels for quenching and tempering — Part 2: Technical delivery conditions for non alloy steels*

EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN 10160, *Ultrasonic testing of steel flat product of thickness equal or greater than 6 mm (reflection method)*

EN 10164:2004, *Steel products with improved deformation properties perpendicular to the surface of the product — Technical delivery conditions*

EN 10340, *Steel castings for structural uses*

EN ISO 148 (all parts), *Metallic materials — Charpy pendulum impact test*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287)*

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EN ISO 4288, *Geometrical product specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture (ISO 4288)*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

EN ISO 17638, *Non-destructive testing of welds — Magnetic particle testing (ISO 17638)*

EN ISO 23278, *Non-destructive testing of welds — Magnetic particle testing - Acceptance levels (ISO 23278)*

3 Terms, definitions and symbols**3.1 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1**line rocker**

component which comprises a circular cylindrical contact surface rocking on a rocker plate

3.1.2**point rocker**

component which comprises a curved convex contact surface rolling on a rocker plate, the curved surface is a portion of a sphere

3.1.3**rocker plate**

circular cylindrical (in case of line rocker) or concave (in case of point rocker, the curved surface is a portion of a sphere) or flat component which transmits force between the rocker and the adjacent structure

3.1.4**shear dowel**

component which provides positive mechanical restraint to horizontal loads and movements

3.2 Symbols**3.2.1 Latin upper case letters:**

| | | |
|-----------|---|------|
| E | modulus of elasticity | MPa |
| M_{Ed} | design eccentricity moment from actions | kNm |
| M_{Sd} | design eccentricity moment caused by friction | kNm |
| N_{Ed} | axial design force | kN |
| N'_{Ed} | design effect from action per unit length | kN/m |
| N_{Rd} | design resistance | N |

| | | |
|-------------|---|------|
| $N'_{z,Rd}$ | design resistance per unit length | kN/m |
| N_{Rk} | characteristic resistance | kN |
| N'_{Rk} | characteristic resistance per unit length | kN/m |
| V_{sd} | horizontal force generated by friction | kN |
| $V_{y,d}$ | total transverse or shear force | kN |

3.2.2 Latin lower case letters:

| | | |
|-----------|--|-----|
| a | radius of the load transferring area | mm |
| b | half width of Hertzian contact area | mm |
| $e_{2,d}$ | design eccentricity due to rotation | mm |
| $e_{3,d}$ | design eccentricity due to translation | mm |
| e_d | total design eccentricity of vertical load | mm |
| f_u | tensile strength of material | MPa |
| f_y | yield strength of material | MPa |
| h | distance between horizontal section to be verified and rocker contact area | mm |
| l | length of rocker | mm |
| r | radius of rocker | mm |
| u | relative movement | mm |

3.2.3 Greek letters:

| | | |
|---------------|---|-----|
| α_d | total design angular rotation about the line of contact, in radians (rad) | rad |
| γ_{M9} | partial material factor | — |

4 Types of rocker bearings

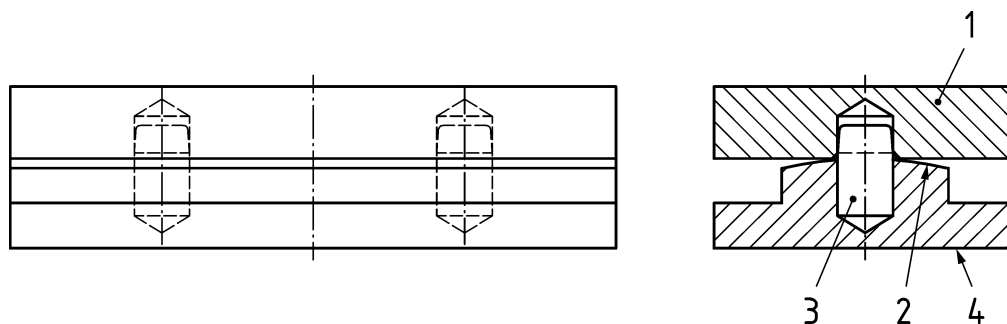
4.1 General

The main components of the different types of rocker bearings in accordance with this document are shown in the following subclauses.

4.2 Line rocker bearing

The main components of a line rocker bearing are shown in Figure 1.

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**Key**

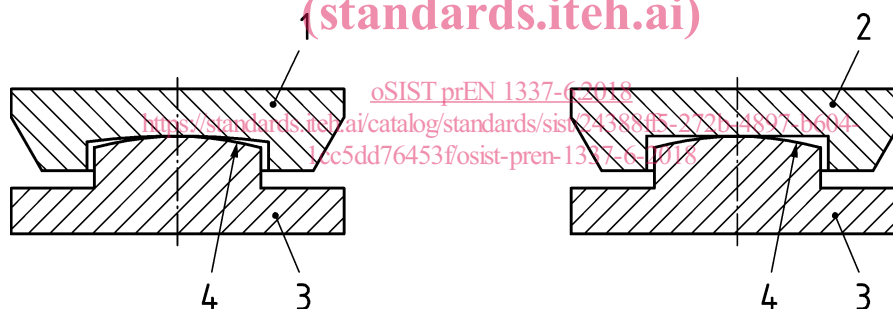
- 1 rocker plate
- 2 circular cylindrical contact surface
- 3 dowel
- 4 line rocker

Figure 1 — Main components of a line rocker bearing

The line rocker bearing permits rotation about an axis parallel to the axis of the curved surface. The rocker and the rocker plate can be inverted.

4.3 Point rocker bearing

The main components of a point rocker bearing are shown in Figure 2.

**Key**

- 1 rocker plate with concave contact surface
- 2 rocker plate with flat contact surface
- 3 point rocker
- 4 convex surface

Figure 2 — Main components of point rocker bearings

The point rocker bearing permits rotation about any axis. The rocker and the rocker plate can be inverted.

5 Materials

5.1 Material for rockers and rocker plates

5.1.1 General

Rockers and rocker plates shall be manufactured from ferrous materials in accordance with 5.1.2, 5.1.3, 5.1.4 and 5.1.5 and Table 1.

The ability of curved surfaces and plates to withstand deformation under load is dependent upon the hardness of the material of which they are made.

Surfaces of rockers and rocker plates in contact shall have the same nominal strength and hardness.

Rockers and rocker plates shall consist of the same quality class.

NOTE There is not a constant relationship between hardness and yield stress of steel but there is between hardness and ultimate strength.

Table 1 — Ferrous material classes

| Material class | Tensile strength (minimum) N/mm ² | Yield strength (minimum) N/mm ² | Impact / at temperature (minimum) — | Surface hardness (maximum) HV 10 | Elongation (minimum) % |
|----------------|---|---|--|-------------------------------------|---------------------------|
| A | 340 | 240 | 27 J/ 0 °C | 150 | 25 |
| B | 490 | 335 | 27 J/ -20 °C | 250 | 21 |
| C | 600 | 420 | 27 J/ -20 °C | 450 | 14 |

5.1.2 Carbon steel

Carbon steel shall be in accordance with the requirements of the EN 10025 series or EN 10083-1 and EN 10083-2. The minimum yield strength shall be 240 N/mm². The relationship between material properties as given in Table 1 shall be considered.

5.1.3 Stainless steel

Stainless steel shall be in accordance with EN 10088-2. The minimum tensile strength shall be 490 N/mm². The relationship between material properties as given in Table 1 shall be considered.

5.1.4 Cast steel

Cast steel shall be in accordance with EN 10340. The relationship between material properties as given in Table 1 shall be considered.

5.1.5 Cast iron

Cast iron shall be of spheroidal graphite type in accordance with EN 10340. The relationship between material properties as given in Table 1 shall be considered.

5.2 Materials for other components

The materials for other components shall be ferrous materials selected for their specific performance which may require high ductility.