



# SLOVENSKI STANDARD

## SIST EN 1337-10:2003

01-december-2003

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Strukturne podpreme - Del 10: Inspekcija in vzdrževanje

Structural Bearings - Part 10: Inspection and maintenance

Lager im Bauwesen - Teil 10: Inspektion und Instandhaltung

Appareils d'appui structuraux - Partie 10: Surveillance

Ta slovenski standard je istoveten z: EN 1337-10:2003

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### ICS:

91.010.30      V^@ã}ããã      Technical aspects

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 1337-10

July 2003

ICS 91.010.30

English version

Structural Bearings - Part 10: Inspection and maintenance

Appareils d'appui structuraux - Partie 10: Surveillance

Lager im Bauwesen - Teil 10: Inspektion und  
Instandhaltung

This European Standard was approved by CEN on 12 June 2003.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 1337-10:2003) has been prepared by Technical Committee CEN /TC 167 "Structural bearings", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2004, and conflicting national standards shall be withdrawn at the latest by January 2004.

The entire European Standard EN 1337 consists of 11 Parts listed here below:

- Part 1 – General design rules
- 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
- Part 9 – Protection
- Part 10 – Inspection and maintenance
- Part 11 – Transport, storage and installation

Annexes A and B are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 1337-10:2003 (E)****1 Scope**

This European Standard applies to the inspection and maintenance of bearings designed in accordance with EN 1337-1, when used in the construction of bridges or structures requiring similar bearing systems. It presupposes the existence of guidelines for the regular inspection of the whole structure during its service life.

It may also be used as appropriate for the inspection and maintenance of bearings designed and/or installed before the introduction of this European Standard.

This European Standard specifies the aspects of each type of bearing that shall be inspected and recorded. It does not specify permissible values. For these reference shall be made to the relevant parts of this European Standard and to the drawings and design calculations for the bearing and the structure.

**NOTE 1** Attention is drawn to the particular necessity for regular inspection and maintenance of bearings as, without such inspection and maintenance, premature failure may occur.

**NOTE 2** National regulations may exist on the subjects covered by this European Standard and, therefore, they prevail on it.

**2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1337-1:2000, *Structural bearings – Part 1: General design rules*.

EN 1337-11: 1997, *Structural bearings – Part 11: Transport, storage and installation*.

**3 Definitions and symbols**

For the purposes of this European Standard the following terms and definitions apply:

**3.1**  
**inspection**

regular observation, noting and reporting (standards.iteh.ai)

**3.1.1**  
**regular inspection**

close visual inspection without measurements, spaced at equal, reasonably frequent, intervals

**3.1.2**  
**principal inspection**

similar to a regular inspection but in more detail and including precise measurement

**3.2**  
**maintenance**

servicing and replacement

**3.2.1****servicing**

cleaning, greasing, painting and repair of minor defects

**3.2.2****replacement**

renewal of major parts of a bearing or of the entire bearing

**3.3 Symbols**

- $h$  protrusion of PTFE
- $v_x$  displacement in the main direction of movement of the structure
- $v_y$  displacement transverse to the main direction of movement of the structure
- $\alpha_x$  angle of rotation in the main direction of movement of the structure
- $\alpha_y$  angle of rotation transverse to the main direction of movement of the structure
- $s_1$  clearance to allow rotational movement
- $s_2$  clearance between vertical surfaces
- $s_3$  clearance between guide surfaces

**4 General requirements for regular and principal inspections**

The condition of the bearings in a structure shall be checked visually, at least as often as the regular inspection of the structure (or failing this at the time of the principal inspection) or if the construction work is not subject to regular inspection, by an inspector, with competent knowledge of bearings, at least as frequently as the structure is inspected. If it is necessary to enable the inspector to do this, bearings shall be cleaned prior to the inspection.

The bearings should be inspected after an accidental collision with the bridge, such as an over-high vehicle colliding with the deck, or after an exceptional event, such as an earthquake.

Should the inspector encounter conditions that he is unable to explain or detect fully, or for which he is unable to recommend remedial action, he shall seek, if need be, the assistance of a special expert before completing his report.

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Depending on the outcome of the inspection one of the following steps shall be undertaken:

no action;

further measurements of the movement capacity (under extreme temperatures, different loads, etc.);

further test procedures;

repair (corrections of the position, replacement of the entire bearing or of parts, renewal or supplement of the protection against corrosion or underneath packing with mortar, etc.).

**5 Regular inspection**

In the regular inspection the following properties shall be checked:

- a) sufficient capacity for residual movement with respect to the type of the bearing, taking into account the temperature of the structure;



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- b) visible defects:
  - cracks;
  - incorrect position;
  - unforeseen movements and deformations;
- c) condition of bedding and fixing;
- d) condition of corrosion protection, dust protection and seals;
- e) condition of sliding and rolling surfaces;
- f) visible defects of adjoining structural parts.

The results shall be recorded. An example is shown in annex B.4. The report shall be filed with plans and drawings of the structure.

In case of visible defects or damage which are likely to affect the function, checks according to clause 6 shall be carried out.

## **6 Principal inspection**

### **6.1 General**

Principal inspections shall be carried out at less frequent intervals than regular inspections (see A.5) and will normally replace one of these. They are intended to result in a precise record of the condition of the bearing and, if properly interpreted and acted upon, will ensure that the bearing will continue to function as intended until the next principal inspection.

It is recommended to carry out the first principal inspection within one year of the structure being put into service and the results compared with the details recorded in accordance with clause 7 of EN 1337-11: 1997.

The principal inspection shall include all the points covered by the regular inspection but in more precise detail. Points of particular importance for each type of bearing are given below. Figures are also included showing the main dimensions to be recorded for each type of bearing. These shall be measured with dead load only on the structure whenever possible. If this is not feasible details of the live loading shall be provided as precisely as possible.

The obtained measurements shall be compared with the design values. Hence the capacity of the bearing for all anticipated future movements and loads shall be checked.

Type numbers in 6.2 correspond to the type numbers in EN 1337-1.

### **6.2 Specific checks for the different types of bearings**

#### **6.2.1 Sliding part of bearings with PTFE elements (see Figure 1)**

For the bearings No. 1.3, 1.4, 1.5, 1.7, 1.8, 2.2, 2.3, 3.3, 3.4, 3.5, 4.2, 4.3, 5.2, 5.3, 6.2, 7.2, 7.3, 7.4 the protrusion  $h$  between the sliding surface and the plate containing the PTFE sheet shall be measured at sufficient points to find the minimum value;  $v_x$ ,  $v_y$  and  $h$  to be recorded.

Where visible the condition of the sliding surface and its fixings shall be reported.



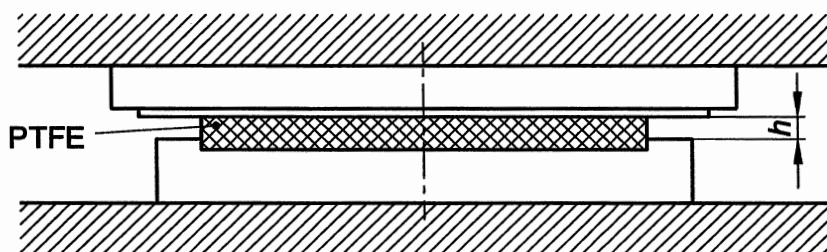


Figure 1 — Sliding part of combined bearings

### 6.2.2 Elastomeric bearings and the elastomeric part of combined bearings (see Figure 2)

For the bearings No. 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8 the visible surfaces shall be checked for cracks and excessive deformations. If cracks extend to the inner steel-plates of the bearing, the report shall inform the owners of this situation and of the risk of corrosion and failure of the product. Moreover, consideration shall be given to replacement of the bearing.

$\alpha_x$ ,  $\alpha_y$ ,  $v_x$  and  $v_y$  to be recorded.

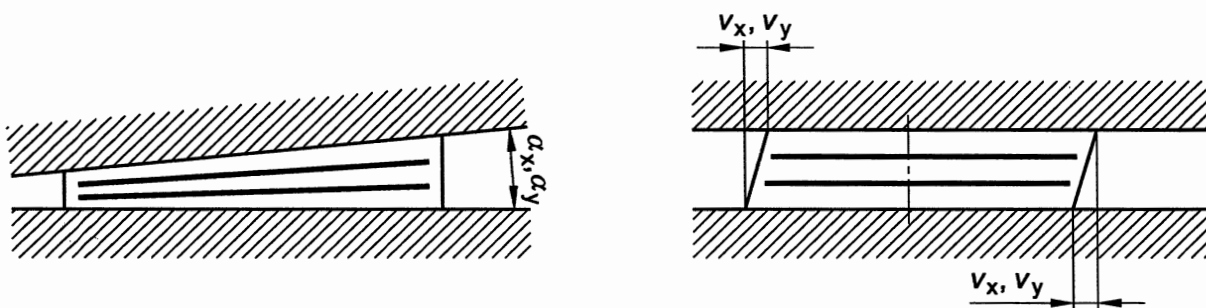


Figure 2 — Elastomeric bearing

### 6.2.3 Single roller bearings (see Figure 3)

For the bearings No. 6.1 and 6.2 the condition of the rolling surfaces, the continuity or otherwise of the line of contact, sloping movement, rotation about the vertical axis, offset in rolling plane, the relative positions of the top and bottom plates  $v_x$  and the rotation angle  $\alpha$  shall be recorded. The condition of any guiding devices shall be reported.

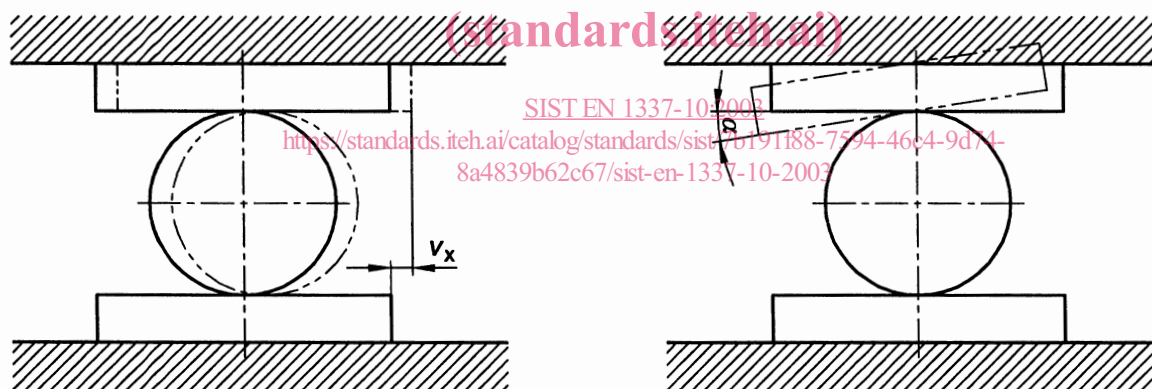


Figure 3 — Roller bearing