SLOVENSKI STANDARD
SIST ISO 6282:2002

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Drsni leģaji - Kovinske tankostene leģajne blazinice - Določ itev meje s0,01*

Plain bearings -- Metallic thin-walled half bearings -- Determination of the sigma 0,01*-limit

Paliers lisses -- Demi-coussinets minces métalliques -- Détermination de la limite élastique sigma 0,01*

Ta slovenski standard je istoveten z: **ISO 6282:1983**

ICS:

21.100.10 Drsni ležaji Plain bearings

SIST ISO 6282:2002 **en**

International Standard 6282

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Plain bearings — Metallic thin-walled half bearings — Determination of the $\sigma_{0,01}$*-limit

*Paliers lisses — Demi-coussinets minces métalliques — Détermination de la limite élastique $\sigma_{0,01}$**

First edition — 1983-10-15

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Descriptors : bearings, plain bearings, bearing bushes, tests, mechanical tests, compression tests, bearing stress, elastic limit.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6282 was developed by Technical Committee ISO/TC 123, *Plain bearings*, and was circulated to the member bodies in July 1981.

It has been approved by the member bodies of the following countries :

Austria	Italy	Sweden
Brazil	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	USSR
France	Poland	Yougoslavia
Germany, F.R.	Romania	
India	Spain	

The member body of the following country expressed disapproval of the document on technical grounds :

USA

This International Standard cancels and replaces ISO Technical Report ISO/TR 6282-1979.

Printed in Switzerland

Plain bearings — Metallic thin-walled half bearings — Determination of the $\sigma_{0,01}$*-limit

1 Scope and field of application

This International Standard specifies a method of determining the $\sigma_{0,01}$*-limit for the steel backing of thin-walled multilayer half bearings for bearing diameters up to 80 mm. It can also be used for bearing diameters up to 160 mm.

2 References

ISO 3548, *Plain bearings — Thin-walled half bearings — Dimensions, tolerances and methods of checking.*

ISO 4383, *Plain bearings — Metallic multilayer materials for thin-walled plain bearings.*

ISO 4385, *Plain bearings — Compression testing of metallic bearing materials.*

ISO 6524, *Plain bearings — Methods of dimensional control — Peripherical length checking of thin-walled half bearings.*

3 Definitions

For the purpose of this Standard the following definitions apply.

3.1 **$\sigma_{0,01}$*-limit** : The compressive hoop stress in a half bearing which creates a permanent set of 0,01 %.

The $\sigma_{0,01}$*-limit is different from the usual $\sigma_{0,01}$-limit as a result of the geometry of the test specimen and the method of application of the test load. In order to make the distinction, the $\sigma_{0,01}$-limit of half bearings is marked with an asterisk (*).

3.2 **compressive hoop stress of a half bearing** : The quotient F/S, expressed in newtons per square millimetre, where F is the normal load, in newtons, applied to an area of cross-section S, in square millimetres, which is determined mathematically.

The area of cross-section S is calculated as follows for the most common material combinations :

$S = L \cdot e_1$ for steel/lead alloys or steel/tin alloys

$S = L\left(e_1 + \frac{e_2}{2}\right)$ for steel/copper alloys

$S = L\left(e_1 + \frac{e_2}{3}\right)$ for steel/aluminium alloys

where

L is the bearing width, in millimetres;

e_1 is the thickness of the steel backing, in millimetres;

e_2 is the thickness of the bearing metal layer, in millimetres.

NOTE — If annular grooves and/or chamfers extend into the steel backing, then the cross-section of the steel backing is to be reduced correspondingly for the calculation.

In the case of oil holes, the inclusion in the calculation should be subject to an agreement between manufacturer and user.

Dependent upon the shape of the locating nick at the joint face and the extent to which the load is carried by it there may be an effect on the measured $\sigma_{0,01}$*-limit.

4 Apparatus

4.1 Pressure testing machine, with hydraulic or pneumatic application of load, equipped with a load indicator having an accuracy of at least ± 1 % of the end scale value, and a length measuring device.

4.2 Master shell and checking block in accordance with the figure.

The master shell shall have the same width as the half bearing to be tested, whereas the checking block may be wider.

NOTE — This test equipment is also used for the determination of the peripheral length of thin-walled half bearings (see ISO 6524).

5 Preparation of test specimen

If possible, half bearings ready for mounting shall be tested. If the necessary test load cannot be applied by the test equipment, then the width of the half bearing is to be reduced correspondingly.

Any reduced width bearing should not include the locating nick.

The surface of the steel backing is to be metallic bright. For the test, this surface is to be thinly oiled.

6 Procedure

6.1 The measuring temperature should be between 20 and 25 °C.

6.2 Insert the checking block into the measuring equipment, line it up and secure it against lateral movement.

6.3 Insert the master shell into the checking block and adjust the load to F_0 to give a compressive stress of 100 N/mm². Unload and remove the master shell.

6.4 Insert the half bearing to be tested into the checking block, apply load F_0 and adjust the length measuring device to read zero. Unload and remove the half bearing from the checking block.

NOTE — The application of the load F_0 is necessary to ensure a perfect fit of the half bearing into the checking block.

6.5 Insert the master shell into the checking block and apply a load F_1 which is greater than F_0. Unload and remove the master shell.

6.6 Insert the half bearing into the checking block and apply the load F_1 for 10 s. Unload and remove the half bearing from the checking block.

6.7 Insert the master shell into the checking block and apply the load F_0. Unload and remove the master shell.

6.8 Insert the half bearing into the checking block and apply the load F_0. The reduction in the peripheral length of the half bearing, caused by the application of load F_1 in accordance with 6.6, is indicated by the length measuring device. Unload and remove the half bearing from the checking block.

6.9 Insert the master shell into the checking block and apply an increased load F_2 in accordance with 6.5 to 6.8. Unload and remove the master shell.

6.10 Repeat the procedure given in 6.5 to 6.8 by gradually increasing the load F until a permanent set of about 0,01 % in the peripheral direction of the half bearing is recorded.

The increment of compressive stress which gives the permanent set of 0,01 % shall not exceed 50 N/mm².

7 Expression of results

The "evaluation sheet" as presented in the annex serves for the evaluation of the measured values obtained in accordance with 6.5 and the following sub-clauses.

The following equation allows calculation of the reduction of the peripheral length of the half bearing :

$$\Delta l_{0,01} = 0{,}05 \cdot \pi \cdot D_{cbM}$$

where

$\Delta l_{0,01}$ is the reduction of the peripheral length, in micrometres;

D_{cbM} is the measured diameter of the checking block bore, in millimetres (see the figure).

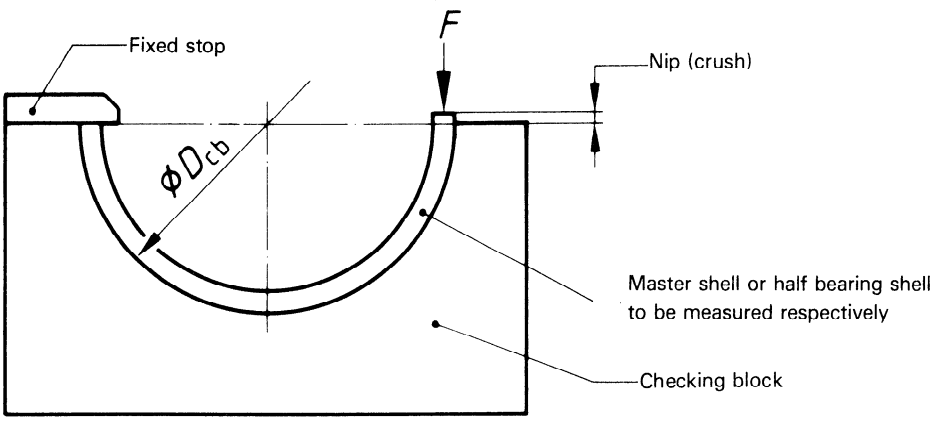
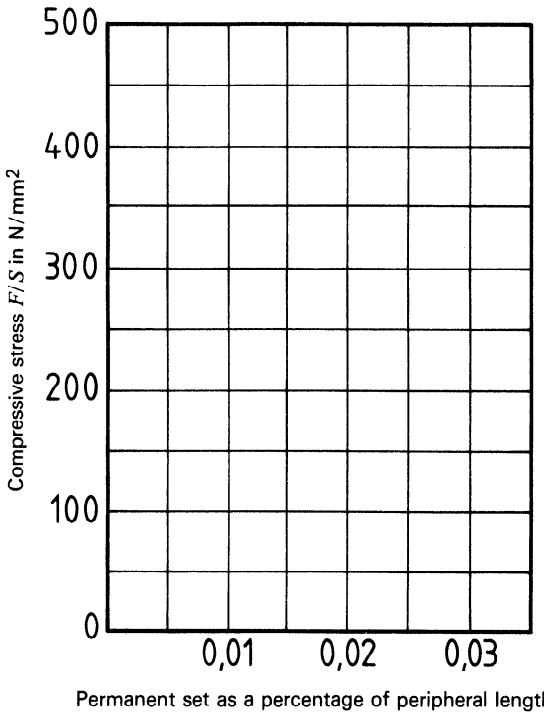


Figure — Checking block

Annex

Evaluation sheet for the determination of the $\sigma_{0,01}$*-limit of metallic thin-walled half bearings

Load F N	Compressive stress F/S N/mm²	Indication of length measuring device (see 6.8) µm	Permanent set % %



Number of test specimen	$\sigma_{0,01}$*-limit N/mm²