



SLOVENSKI STANDARD

SIST EN 16955:2017

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Pohištveno okovje - Stožčaste tlačne cevi za samopodporne plinske vzmeti za nastavitve višine sedenja - Preskusne metode in zahteve za trdnost in trajnost

Hardware for furniture - Tapered pressure tubes for self-supporting gas springs for the height adjustment of seating - Test methods and requirements for strength and durability

Möbelbauteile - Konische Druckrohre für selbsttragende Gasfedern zur Höhenverstellung von Sitzmöbeln - Prüfverfahren und Anforderungen für die Festigkeit und Dauerhaltbarkeit

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Quincaillerie d'ameublement - Tubes coniques sous pression pour vérins à gaz autoportants pour l'ajustement de la hauteur de siège - Méthodes et exigences d'essai pour la résistance et la durabilité

Ta slovenski standard je istoveten z: EN 16955:2017

ICS:

97.140 Pohištvo Furniture

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EUROPEAN STANDARD

EN 16955

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April 2017

ICS 97.140

English Version

Hardware for furniture - Tapered pressure tubes for self-supporting gas springs for the height adjustment of seating - Test methods and requirements for strength and durability

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This European Standard was approved by CEN on 15 February 2017.

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

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European foreword

This document (EN 16955:2017) has been prepared by Technical Committee CEN/TC 207 “Furniture”, 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of an identical text or by endorsement, at the latest by October 2017, and conflicting national standards shall be withdrawn at the latest by October 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard specifies test methods and requirements for the strength and durability of tapered pressure tubes for self-supporting gas springs for the height adjustment of seating.

Annex A (normative) contains product information.

Annex B (informative) contains a guide for choosing the correct strength class.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN ISO 7500-1:2016, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1)*

EN ISO 9934-2, *Non-destructive testing - Magnetic particle testing - Part 2: Detection media (ISO 9934-2)*

ISO 1099, *Metallic materials - Fatigue testing - Axial force-controlled method*

3 Terms and definitions

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Not applicable.

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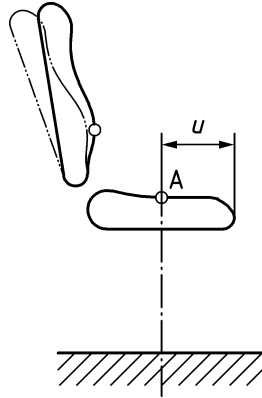
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4 Strength classes for pressure tubes

The determination of the strength classes is based on characteristics given in Table 1. The dimension u of the seating is given in Figure 1.

Table 1 — Strength classes for pressure tubes

Strength class ^a	Alternate bending moment	Largest distance between load bearing structure of the seat and centre of the column
	M Nm	u mm
2	±190	≤ 340
3	±210	≤ 370
4	±240	≤ 400
^a Due to increased requirements, strength class 1 is not part of this European Standard.		

**Key**

A mid of centre column

u largest distance between load bearing structure of the seat and centre of the column

Figure 1 — Largest distance u between load bearing structure of the seat and centre of the column

5 Test apparatus

5.1 Material testing machine

A material testing machine capable of performing tests in accordance with ISO 1099 shall be used. The testing machine force measuring system shall be verified statically in accordance with EN ISO 7500-1:2016, Class 1.

5.2 Testing equipment for magnetic powder flaw test

A testing equipment for magnetic powder flaw test for the particle inspection for the detection of surface imperfections shall be used.

6 Test

6.1 General

For each combination of dimensions, production procedure, surface finish, materials or condition of the material or any other characteristic which affects the strength and durability, a separate test shall be conducted.

6.2 Strength and durability

6.2.1 Sampling

The test samples shall consist of 32 pressure tubes taken on a random basis from the series production. Any kind of marking on the pressure tube shall be done before strength and durability test.

6.2.2 Test procedure

6.2.2.1 Test setup

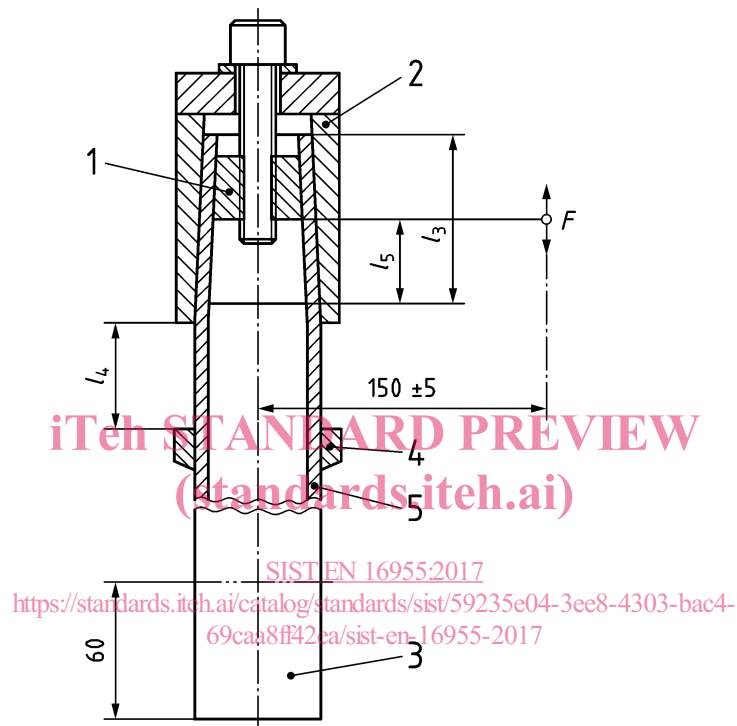
The test setup is shown in Figure 2.

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The end of the pressure tube shall be firmly fixed to the element which applies the load. If the element which applies the load is secured against coming loose by a counter-cone on the internal side of the pressure tube the free bending length l_5 shall be at least 50 % of the overlap l_3 (see Figure 2).

The free length l_4 between the upper and lower clamps shall be at least 50 mm. If there are series-produced shapings, embossings etc. in the area of the bearing length of the pressure tube, these areas shall be included in the tests so that they are in the compression-tension zone. Exceptions to this are pressure tubes with shapings, embossings etc. which are up to 60 mm away from the lower end of the pressure tube.

Dimensions in millimetres



Key

- 1 counter-cone
- 2 element which applies the load
- 3 shapings and embossings permitted in this area without testing
- 4 lower clamp
- 5 pressure tube
- l_3 length of connection between the holding cone and the pressure tube cone
- l_4 free length between upper and lower clamp
- l_5 free bending length
- F test load

Tolerances: $\pm 0,5$ mm of the nominal dimensions, unless otherwise stated

Figure 2 — Test setup for strength and durability

6.2.2.2 Test procedure

The test shall be performed according to ISO 1099.

The alternate bending moment M shall be as specified in Table 1. It shall act in parallel to the longitudinal axis of the pressure tube. The length of the lever arm which applies the force is (150 ± 5) mm. The time characteristic of the test force shall be sinusoidal. The stress cycle frequency shall not exceed 30 Hz. The alternate bending stress shall be applied with stress regulation. The temperature of the test piece shall not exceed 50 °C during the test.

To determine the strength and durability, the alternate bending stresses shall be applied in 2×10^6 cycles and a mean stress of 0.

6.2.3 Evaluation and requirement

After the test, the surfaces of the test pieces shall be subjected to a magnetic powder flaw test over their entire length and their entire circumference.

The magnetic powder flaw test shall be performed on pressure tubes made of unalloyed and low-alloyed steels with alternating current magnetization. The test areas shall be cleaned and free of interfering impurities. Suitable test apparatus shall be used to ensure that a tangential field strength of at least 2 kA/m is achieved. Wet test media shall be used for the test. The particle size of the magnetic powder shall be according to EN ISO 9934-2.

Only carrier liquids which do not cause any corrosion to the subject of the test shall be used. If oil is used as a carrier agent, the sort selected shall be easily removed and leave no interfering residue. Marked test oils are suitable.

If water is used as a carrier agent, it can be necessary to use additives to ensure that the surface is properly wet (amount according to manufacturer's instructions). The detection sensibility shall not be impaired by these additives.

The test is deemed to have been passed if no cracks or fractures are seen on any of the 32 pressure tubes tested.

7 Test report

Each type test shall be documented in a test report.

The test report shall contain at least the following information:

- address of testing laboratory;
- date of testing;
- date of production of the pressure tubes;
- full description of the pressure tubes (e.g. type, material, surface finish, dimensions);
- manufacturer of the pressure tubes;
- dimensions of the test fixture (according to the details supplied by the manufacturer of the pressure tubes);
- overlap $l/3$ in test fixture;
- alternate bending moment and the strength class;