SLOVENSKI STANDARD

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Nadomešča:

SIST ISO 1813:1999

Jermenski pogoni - Mnogoterni klinasti jermeni, spojeni klinasti jermeni ter široki in šestrobni klinasti jermeni - Električna prevodnost antistatičnih trakov - Značilnosti in metode preskušanja

Belt drives - V-ribbed belts, joined V-belts and V-belts including wide section belts and hexagonal belts - Electrical conductivity of antistatic belts: Characteristics and methods of test

Transmissions par courroies - Courroies striées, courroies trapézoïdales simples et jumelées y compris celles à section large et hexagonales - Conductibilité électrique des courroies anti-électrostatiques: Spécifications et méthodes d'essai

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ICS:

21.220.10	Jermenski pogoni in njihovi deli	Belt drives and their components

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INTERNATIONAL STANDARD

ISO 1813

Fourth edition
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Belt drives — V-ribbed belts, joined V-belts and V-belts including wide section belts and hexagonal belts — Electrical conductivity of antistatic belts: Characteristics and methods of test

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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 preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 1, *Friction*.

This fourth edition cancels and replaces the third edition (ISO 1813:1998), which has been technically revised.

Belt drives — V-ribbed belts, joined V-belts and V-belts including wide section belts and hexagonal belts — Electrical conductivity of antistatic belts: Characteristics and methods of test

1 Scope

This International Standard specifies the maximum electrical resistance of antistatic endless V-ribbed belts, joined V-belts, and single V-belts including wide section belts and hexagonal belts, as well as corresponding production control and individual proof methods of measurements.

The application of this International Standard is limited to new belts intended to be used in an explosive atmosphere or in situations where there is a fire risk. The test is intended to ensure that the belt is sufficiently conductive to dissipate charges of electricity which can form on it in service.

In case of a production control test, the decision is left to national standards or agreement between interested parties as to whether the test shall be carried out on each belt in a batch or on only a percentage of belts in a batch.

NOTE For each proof test, it is intended that the belt manufacturer determine which type of electrode and conductive coating material can be used.

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.

ISO 1604, *Belt drives — Endless wide V-belts for industrial speed-changers and groove profiles for corresponding pulleys*

ISO 2790, *Belt drives — V-belts for the automotive industry and corresponding pulleys — Dimensions*

ISO 3410, *Agricultural machinery — Endless variable-speed V-belts and groove sections of corresponding pulleys*

ISO 4183, *Belt drives — Classical and narrow V-belts — Grooved pulleys (system based on datum width)*

ISO 4184, *Belt drives — Classical and narrow V-belts — Lengths in datum system*

ISO 5289, *Agricultural machinery — Endless hexagonal belts and groove sections of corresponding pulleys*

ISO 5290, *Belt drives — Grooved pulleys for joined narrow V-belts — Groove sections 9N/J, 15N/J and 25N/J (effective system)*

ISO 5291, *Belt drives — Grooved pulleys for joined classical V-belts — Groove sections AJ, BJ, CJ and DJ (effective system)*

ISO 9981, *Belt drives — Pulleys and V-ribbed belts for the automotive industry — PK profile: Dimensions*

ISO 9982, *Belt drives — Pulleys and V-ribbed belts for industrial applications — PH, PJ, PK, PL and PM profiles: dimensions*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

3 Electrical conductivity characteristics

The electrical conductivity of an individual belt, when tested by the production control test method (factory test) in accordance with Clause 7, shall have an electrical resistance not greater than that given by the appropriate limit value specified in Table 1, 2, or 3.

The electrical conductivity of an individual belt, when proof-tested in accordance with Clause 8, shall have an electrical resistance not greater than that given by Formula (1).

4 Principle

The electrical resistance along a fixed length of belt is measured by an insulation tester under specified conditions. The belt(s) is (are) accepted as suitable for antistatic duties if the electrical conductivity is sufficiently high that a specified level of electrical resistance is not exceeded.

5 Test apparatus and material

5.1 Insulation tester, with a nominal open-circuit voltage of 500 V d.c. capable of applying a voltage of not less than 40 V with a power of not more than 3 W in the belt section under test and capable of measuring the electrical resistance with an accuracy of ±5 %.

The voltage shall be applied no longer than is necessary to carry out the test, in order to reduce the risk of overheating the test piece.

For values of resistance above 10^6 Ω, an instrument with a nominal open-circuit voltage of 1 000 V may be used.

5.2 Metal electrodes

5.2.1 Two metal electrodes, of low electrical resistance, preferably brass, having contact surfaces of minimum width of 25 mm, arranged in a nominal distance of 100 mm apart on an electrically insulated base (see Figure 1).

5.2.2 Electrodes for testing single V-belts (driving surfaces). The dimensions of the V-groove of the fixed electrodes shall be as specified for the pulley groove profile associated with the belt. The groove angle shall be specified by the manufacturer according to the design and type of belt being tested (see Figure 3).

In order to maintain continuity with previous editions of this International Standard, the movable electrodes applicable to classical and narrow V-belts are retained as alternatives to the fixed electrodes. These electrodes have contact surfaces which are free to rotate around an axis parallel to the drive side surfaces of the belt (see Figures 5 and 6 and Table A.1).

These types of electrodes are not applicable to V-ribbed belts or joined V-belts.

5.2.3 Electrodes for testing V-ribbed belts (driving surfaces).

5.2.3.1 Electrodes for testing the flank of the belt of V-ribbed belts (driving surfaces). The dimensions of the grooved electrode shall be as specified for the pulley groove profile associated with the belt (see Figure 4).

For V-ribbed belts with more than four ribs, it is necessary to move the belt so that the entire number of ribs are tested. If the material permits to test a higher number of ribs, it is not useful to move the belt.

NOTE The angle, α, is the same for the belt and the pulley.

5.2.3.2 Electrodes for testing the back of the belt of V-ribbed belts (driving surfaces). For the measurement on the back of the belt, the length, l, shall be considered equal to the pitch, P, multiplied by the number of ribs, in accordance with ISO 9981 or ISO 9982, as applicable.

EXAMPLE PK with six ribs

$l = 3{,}56 \times 6 = 21{,}36$ mm

5.2.4 Electrodes for testing joined V-belts (driving surfaces). When testing the joined V-belt as a whole, the dimensions of the grooved electrodes shall be as specified for the pulley groove profile associated with the belt. The groove angle shall be specified by the manufacturer according to the design and type of belt being tested (see Figure 4).

When testing the individual belts comprising the joined V-belt, the electrodes shall consist of two V-grooves. The groove angle shall be specified by the manufacturer according to the design and type of belt being tested.

For joined V-belts with more than two strands, it is necessary to move the belt so that the entire belt is tested.

5.3 Belt loading, used as a means of applying a force of 1 N per millimetre nominal width of the belt to ensure adequate contact between the electrode and the belt shall be provided (see Figure 1). The force may be applied indirectly by a lever arm (see Figure 2 for typical apparatus).

For joined V-belts inserted in an electrode arrangement, as shown in Figure 4, the specified test force shall be applied on each single belt. The groove spacing is considered to be the belt top width.

For V-ribbed belts, the nominal width is equal to the pitch, P, multiplied by the number of ribs.

EXAMPLE PK with 6 ribs

Width = 3,56 × 6 = 21,36 mm

The load will be 21,36 N

6 Test piece

The test piece is a complete endless V-ribbed belt, joined V-belt, or single V-belt.

7 Production control test method (factory method)

7.1 Conditioning and test conditions

The test shall be carried out at ambient temperature between 15 °C and 30 °C with the product allowed to cool to within this temperature range before testing.

7.2 Test procedure

Straighten the belt between the electrodes. To ensure adequate electrical contact between the belt and the electrode, apply the force as given in 5.3.

Avoid breathing on the test surfaces as any condensation of moisture can falsify the result.

Measure the resistance in ohms, 5 s ± 1 s after applying the voltage.