INTERNATIONAL STANDARD

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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

Transmission 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

Reference number
ISO 1813:1998(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 1813 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 1, *Veebelts and grooved pulleys*.

This third edition cancels and replaces the second edition (ISO 1813:1979), which bas been technically revised. In particular a production control test method (factory method) and the limit values of electrical resistance for each type and profile of belts have been added.

Annex A of this International Standard is for information only.

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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

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 may form on it in service.

In the 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, the belt manufacturer should determine which type of electrode and conductive coating material must be used.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of the publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 471:1995, *Rubber — Temperatures, humidities and times for conditioning and testing*.

ISO 1604:1989, *Belt drives — Endless wide V-belts for industrial speed-changers and groove profiles for corresponding pulleys*.

ISO 2790:1989, *Belt drives — Narrow V-belts for the automotive industry and corresponding pulleys — Dimensions*.

ISO 3410:1989, *Agricultural machinery — Endless variable-speed V-belts and groove sections of corresponding pulleys*.

ISO 4183:1995, *Belt drives — Classical and narrow V-belts — Grooved pulleys (system based on datum width).*

ISO 4184:1992, *Belt drives — Classical and narrow V-belts — Lengths in datum system*.

ISO 5289:1992, *Agricultural machinery — Endless hexagonal belts and groove sections of corresponding pulleys*.

ISO 5290:1993, *Belts drives — Groove pulleys for joined narrow V-belts — Groove sections 9J, 15J, 20J and 25J (effective system).*

ISO 5291:1993, *Belts drives — Groove pulleys for joined classical V-belts — Groove sections AJ, BJ, CJ and DJ (effective system).*

ISO 9981:1998, *Belts drive — Pulleys and V-ribbed belts for the automotive industry — PK profile: Dimensions*.

ISO 9982:1998, *Belts drive — Pulleys and V-ribbed belts for industrial applications — PH, PJ, PK, PL and PM profiles: Dimensions*.

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 tables referred to in 7.4.

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 the appropriate formula in 8.6.

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

Electrical insulation test meter 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 $\pm$ 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.

NOTE — 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

Metal electrodes (two) of low electrical resistance, preferably brass, having contact surfaces of minimum width 25 mm, arranged a nominal distance of 100 mm apart on an electrically insulated base (see figure 1).

5.2.1 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).