SLOVENSKI STANDARD

SIST ISO 5292:1997

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Belt drives -- V-belts and V-ribbed belts -- Calculation of power ratings

Transmissions par courroies -- Courroies trapézoïdales et striées -- Calcul des puissances transmissibles

Ta slovenski standard je istoveten z: ISO 5292:1995

ICS:

21.220.10	Jermenski pogoni in njihovi deli	Belt drives and their components

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INTERNATIONAL STANDARD

ISO
5292

Second edition
1995-03-15

Belt drives — V-belts and V-ribbed belts — Calculation of power ratings

Transmissions par courroies — Courroies trapézoïdales et striées — Calcul des puissances transmissibles

Reference number
ISO 5292:1995(E)

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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 re-presented 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 5292 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 1, *Veebelts and grooved pulleys*.

This second edition cancels and replaces the first edition (ISO 5292:1980), which has been technically revised.

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Belt drives — V-belts and V-ribbed belts — Calculation of power ratings

1 Scope

This International Standard specifies generally acceptable formulae for power ratings, together with appropriate correction terms and factors used in the design of industrial V-belt and V-ribbed belt drives with two pulleys.

The formulae are suitable for use with cross-sections covered in existing International Standards as well as for cross-sections which are in the process of being studied for future International Standards.

2 Definition

For the purposes of this International Standard, the following definition applies.

2.1 power rating: Power that a particular V-belt or each rib of a V-ribbed belt can transmit under specified geometrical and ambient conditions over a given period of time, provided that the drive is installed and maintained following generally accepted rules.

NOTE 1 The power rating is a function of the V-belt and V-ribbed belt cross-section, the pitch diameter and angular velocity of the small pulley. Correction terms of factors for speed ratio, angle of contact and belt length are introduced.

3 Power rating

The power rating per belt or rib, P, is given, in kilowatts, by the formula:

$$P = K(P_1 + \Delta P_1 + \Delta P_2)$$

where

$$K = \frac{m}{m-1}\left(1 - m^{-\theta/\pi}\right)$$

$$P_1 = d_p\omega\left[C_1 - C_2\left(\frac{1}{d_p}\right) - C_3(d_p\omega)^2 - C_4 \lg(d_p\omega)\right]$$

$$\Delta P_1 = C_4\omega d_p \lg \frac{2}{1 + 10^{[C_2/(C_4 d_p)](1/S - 1)}}$$

$$\Delta P_2 = d_p\omega C_4 \lg \frac{L}{L_o}$$

where

$m = 5$ for V-belts;

$m = 4$ or 5 for V-ribbed belts;

θ is the angle of contact on the small pulley in radians (if θ is given in degrees, then π must be replaced by 180 in the formula for K);

P_1 is the basic power rating, in kilowatts;

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ΔP_1 is the add-on power for speed ratio, in kilowatts;

ΔP_2 is the add-on power for length, in kilowatts;

d_p is the pitch diameter of the small pulley, in millimetres;

ω is the angular velocity of the small pulley, in radians per second;

C_1, C_2, C_3 and C_4 are parameters corresponding to a specific quality level of the belts and to a satisfactory period of time (these

can be different from one make of belts to another and/or from one grade of quality to another of belts from the same manufacturer);

S is the largest value of R or $1/R$, where R is the speed ratio;

L_o is the base length, in millimetres;

L is the actual belt length, in millimetres;

L_o and L are measured in the datum system or in the effective system.