INTERNATIONAL STANDARD

ISO 5291

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

Transmissions par courroies — Poulies à gorges pour courroies trapézoïdales jumelées classiques — Sections de gorge AJ, BJ, CJ et DJ (système effectif)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 5291 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 1, *Friction*.

This third edition cancels and replaces the second edition (ISO 5291:1993), of which it constitutes a minor revision.

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

1 Scope

This International Standard specifies the principal characteristics of grooved pulleys (for groove sections AJ, BJ, CJ and DJ), intended to take joined classical V-belts for industrial power transmission drives.

NOTE 1 The effective width of a groove is regarded as the basic dimension of standardization for grooves and for the corresponding joined V-belts considered as a whole.

NOTE 2 The pitch line position can only be given approximately. The approximate pitch diameter of a pulley can be calculated by the following formula:

$$d_p = d_e - 2b_e$$

2 Normative references

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

ISO 254, *Belt drives — Pulleys — Quality, finish and balance*

ISO 1081, *Belt drives — V-belts and V-ribbed belts, and corresponding grooved pulleys — Vocabulary*

ISO 9980:1990, *Belt drives — Grooved pulleys for V-belts (system based on effective width) — Geometrical inspection of grooves*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1081 (drives using V-belts, i.e. belts and grooved pulleys) apply.

4 Specifications

4.1 Groove profiles

4.1.1 Groove angle, α

The groove angle (see Figure 1) shall have one of the following values:

— $\alpha = 34°$ (for groove sections AJ, BJ and CJ only);

— $\alpha = 36°$ (for groove section DJ only);

— $\alpha = 38°$.

The relationship between the groove angle and the range of effective diameters which should be used is given in Table 2.

4.1.2 Profile dimensions

The dimensions shown in Figures 1 and 2 shall have the values specified in Table 1.

The actual diameter should not be greater than $d_e + 2\delta h_1$. The straight sides of the groove should be at least as high as $d_e - 2\delta h_2$.

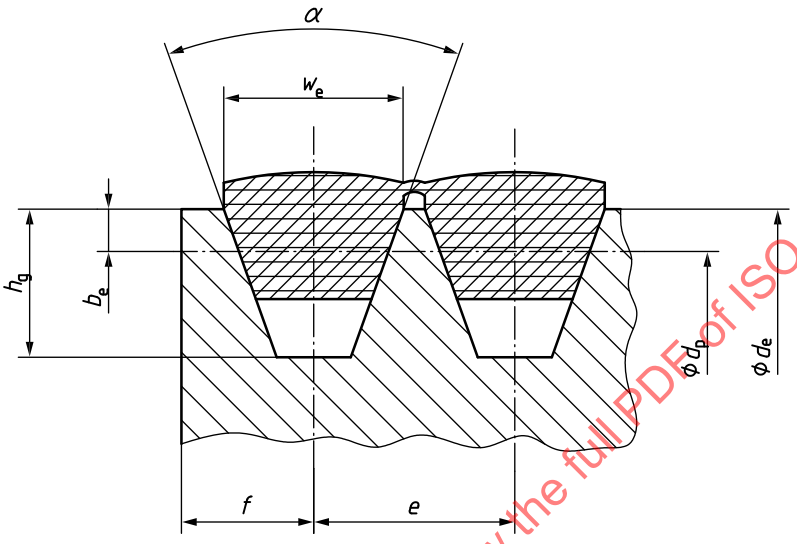

Figure 1

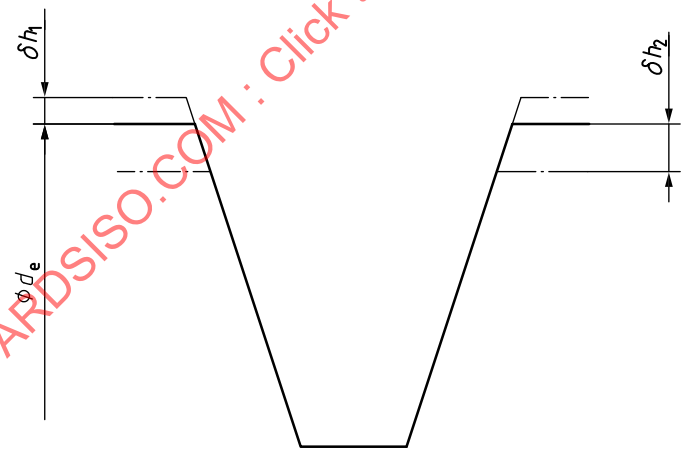

Figure 2

Table 1 — Profile dimensions

Groove section	w_e	δh_1	δh_2	b_e	h_g	e	Tolerance on e[a]	Sum of deviation of e[b]	f[c] min.
AJ	13	0,2	0,35	1,5	12	15,88	±0,3	±0,6	9
BJ	16,5	0,25	0,4	2	14	19,05	±0,4	±0,8	11,5
CJ	22,4	0,3	0,45	3	19	25,4	±0,5	±1	16
DJ	32,8	0,3	0,55	4,5	26	36,53	±0,6	±1,2	23

a This tolerance applies to the distance between the axes of two consecutive groove profiles.

b The sum of all deviation from the nominal value e for all grooves in any one pulley shall not exceed the value stated in this table.

c Variations of f shall be taken into consideration in the alignment of the pulleys.

4.2 Effective diameter, d_e

4.2.1 Series of effective diameters — Groove angles in relation to given effective diameters

See Table 2.

Table 2 — Groove angles

Dimensions in millimetres

Groove section	Groove angles, α		
	34°	36°	38°
	Effective diameters, d_e		
AJ	$d_e \leq 125$		$d_e > 125$
BJ	$d_e \leq 195$		$d_e > 195$
CJ	$d_e \leq 325$		$d_e > 325$
DJ		$d_e \leq 490$	$d_e > 490$

4.2.2 Smallest effective diameters in relation to given groove sections

See Table 3.

Table 3 — Smallest effective diameters

Groove section	Smallest effective diameter mm
AJ	80
BJ	130
CJ	210
DJ	370

5 Geometrical inspection of grooves

5.1 Groove profile

The corresponding limit gauges in accordance with 3.2.3 of ISO 9980:1990 shall be used.

5.2 Groove spacing

A groove spacing locator incorporating sets of interchangeable balls as indicated in 5.3 and in accordance with Clause 4 of ISO 9980:1990 shall be used.

5.3 Effective diameter

Cylindrical checking balls shall be used with the values of the correction term given in Table 4, in accordance with Clause 5 of ISO 9980:1990.

5.4 Run-out tolerances

In accordance with Clause 6 of ISO 9980:1990, the tolerances on radial and axial run-outs shall be checked using the values given in Table 5.

6 Quality, surface finish and balancing of pulleys

The quality, surface finish and balancing of pulleys are specified in ISO 254.

Table 4 — Checking balls or rods and correction terms

Dimensions in millimetres

Groove section	Groove angle α	Diameter of balls or rods d		Rounded correction term $2h_s$
		nom.	tol.[a]	
AJ	34° and 38°	11,6	$^{0}_{-0,043}$	9
BJ	34° 38°	14,7	$^{0}_{-0,043}$	11 12
CJ	34° 38°	20	$^{0}_{-0,052}$	15 16
DJ	36° 38°	28,5	$^{0}_{-0,052}$	20 21

[a] Tolerances are in accordance with ISO 286-2, tolerance grade h9.

Table 5 — Tolerances on radial and axial run-outs

Dimensions in millimetres

Effective diameter	Tolerances on radial and axial run-outs	
	Radial	Axial at level a[a]
d_e nom.	t_1	t_2
$d_e \leq 125$	0,2	0,3
$125 < d_e \leq 315$	0,3	0,4
$315 < d_e \leq 710$	0,4	0,6
$710 < d_e \leq 1\,000$	0,6	0,8
$1\,000 < d_e \leq 1\,250$	0,8	1
$1\,250 < d_e \leq 1\,600$	1	1,2
$1\,600 < d_e \leq 2\,500$	1,2	1,2

[a] $a = b_s$, where b_s is the effective line differential.