BS ISO 5291:2011

BSI Standards Publication

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

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of ISO 5291:2011.

The UK participation in its preparation was entrusted to Technical Committee MCE/10, Belts & Pulley Drive.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 70601 1

ICS 21.220.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2012.

Amendments issued since publication

Date	Text affected

BS ISO 5291:2011

INTERNATIONAL STANDARD

ISO 5291

Third edition
2011-12-15

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)

Reference number
ISO 5291:2011(E)

COPYRIGHT PROTECTED DOCUMENT

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

Published in Switzerland

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.

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.

INTERNATIONAL STANDARD ISO 5291:2011(E)

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:

$$d_{\mathrm{p}} = d_{\mathrm{e}} - 2b_{\mathrm{e}}$$

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 $d_e - 2\delta h_2$.

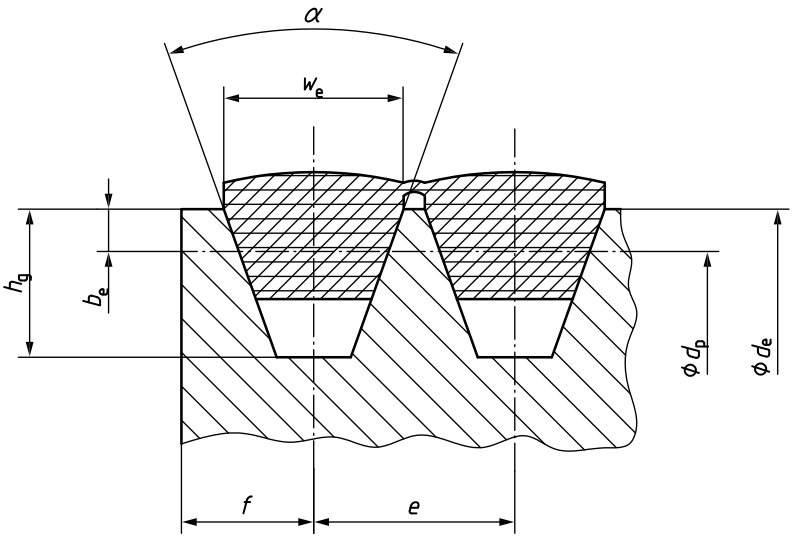

Figure 1

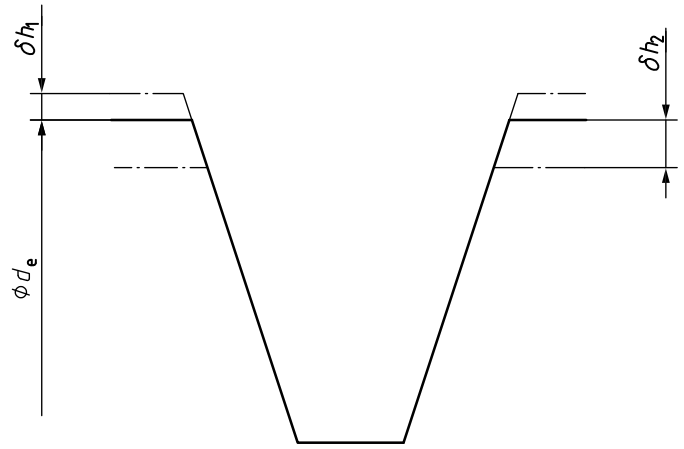

Figure 2

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.

Bibliography

[1] ISO 286-2, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

ICS 21.220.10
Price based on 6 pages

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™