International Standard 5290

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Grooved pulleys for joined narrow V-belts — Groove sections 9J, 15J, 20J and 25J

Poulies à gorges pour courroies trapézoïdales jumelées étroites — Sections de gorge 9J, 15J, 20J *et* 25J

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5290 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

ISO 5290 was first published in 1978. This second edition cancels and replaces the first edition, to which Addendum 1, *Series of effective diameters* and the "References" clause have been added. The presentation has also been altered.

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Grooved pulleys for joined narrow V-belts — Groove sections 9J, 15J, 20J and 25J

1 Scope and field of application

This International Standard specifies the principal characteristics of grooved pulleys (for groove sections 9J, 15J, 20J and 25J), intended to take joined narrow V-belts for industrial power transmission drives.

Some background information on the series of effective diameters is given in the annex.

NOTES

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

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

$$d_p \approx d_e - 2b_{e,\,nom}$$

2 References

ISO 1081, *Drives using V-belts and grooved pulleys — Terminology.*

ISO 8419, *Pulleys and belts (including V-belts) — Narrow joined V-belts — Lengths in the effective system.*[1)]

3 Specifications

3.1 Groove profiles

3.1.1 Groove angles, α

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

$\alpha = 36°$ (for groove section 9J only)
$\alpha = 38°$
$\alpha = 40°$
$\alpha = 42°$

The relationship of groove angle to the range of effective diameters which should be used is given in table 3.

3.1.2 Dimensions of profiles

The dimensions shown in figures 1 and 2 shall have the values specified in table 1.

NOTE — The straight sides of the groove should be at least as high as $d_e - 2\delta h_2$.

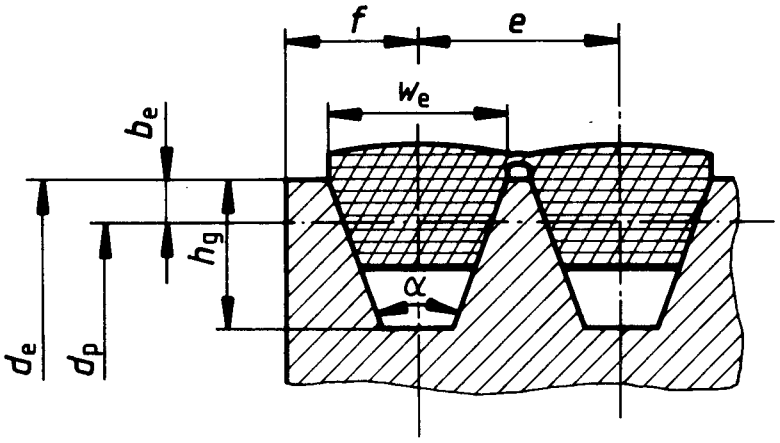

Figure 1

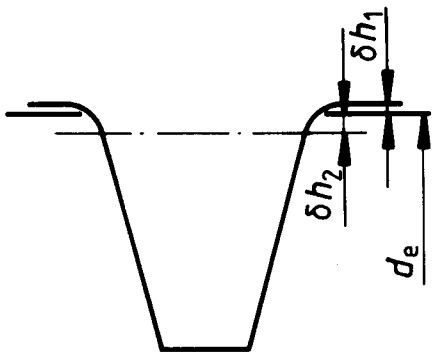

Figure 2

1) At present at the stage of draft.

Table 1

Dimensions and tolerances in millimetres

Groove section[1]	w_e	δh_1	δh_2	b_e nom.	h_g min.	e	Tolerance on e[2]	Sum of deviations of e[3]	f min.
9J	8,9	0,20	0,30	0,6	8,9	10,3	± 0,25	± 0,5	9
15J	15,2	0,25	0,40	1,3	15,2	17,5	± 0,25	± 0,5	13
20J	20,9	0,30	0,45	1,8	20,9	24,4	± 0,30	± 0,6	17
25J	25,4	0,30	0,50	2,5	25,4	28,6	± 0,40	± 0,8	19

1) It will be left to the discretion of the individual national standards organization whether either groove section 20J or groove section 25J will be adopted in their national standards.

2) These tolerances apply to the distance between the axes of two consecutive groove profiles.

3) The sum of all deviations from the nominal value e for all grooves in any one pulley should not exceed the value stated in this table.

3.2 Effective diameters, d_e

3.2.1 Series of effective diameters

See table 2.

3.2.2 Groove angles in relation to given effective diameters

See table 3.

3.2.3 Smallest effective diameters in relation to given groove sections

See table 4.

Table 2

Dimensions in millimetres

d_e nom.	d_e min.	Groove section 9J Status[1]	9J d_e max.	15J Status[1]	15J d_e max.	20J Status[1]	20J d_e max.	25J Status[1]	25J d_e max.
67	67,0	*	71,0						
71	71,0	**	75,0						
75	75,0	*	79,0						
80	80,0	**	84,0						
85	85,0	*	89,0						
90	90,0	**	94,0						
95	95,0	*	99,0						
100	100,0	**	104,0						
106	106,0	*	110,0						
112	112,0	**	116,0						
118	118,0	*	122,0						
125	125,0	**	129,0						
132	132,0	*	136,0						
140	140,0	**	144,0						
150	150,0	*	154,0						
160	160,0	**	164,0						
170	170,0								
180	180,0	*	184,0	**	187,0				
190	190,0			*	197,0				
200	200,0	**	204,0	**	207,0				

Table 2 *(concluded)*

Dimensions in millimetres

d_e		Groove section							
		9J		15J		20J		25J	
nom.	min.	Status[1]	d_e max.	Status[1]	d_e max.	Status[1]	d_e max.	Status[1]	d_e max.
212	212,0			*	219,0				
224	224,0	*	228,0	**	231,0				
236	236,0			*	243,0				
250	250,0	**	254,0	**	257,0				
265	265,0			*	272,0	*	274,6		
280	280,0	*	284,5	**	287,0	**	289,6		
300	300,0			*	307,0	*	309,6		
315	315,0	**	320,0	**	322,0	**	324,6	**	320,0
335	335,0					*	344,6	*	340,4
355	355,0	*	360,7	*	362,0	**	364,6	**	360,7
375	375,0					*	384,6	*	381,0
400	400,0	**	406,4	**	407,0	**	409,6	**	406,4
425	425,0					*	434,6	*	431,8
450	450,0	*	457,2	*	457,2	**	459,6	**	457,2
475	475,0					*	484,6	*	482,6
500	500,0	**	508,0	**	508,0	**	509,6	**	508,0
530	530,0							*	538,5
560	560,0	*	569,0	*	569,0	*	569,6	**	569,0
600	600,0							*	609,6
630	630,0	*	640,1	**	640,1	**	640,1	**	640,1
670	670,0								
710	710,0	*	721,4	*	721,4	*	721,4	*	721,4
750	750,0								
800	800,0	*	812,8	**	812,8	**	812,8	**	812,8
850	850,0								
900	900,0			*	914,4	*	914,4	*	914,4
950	950,0								
1 000	1 000,0			**	1 016,0	**	1 016,0	**	1 016,0
1 060	1 060,0								
1 120	1 120,0			*	1 137,9	*	1 137,9	*	1 137,9
1 180	1 180,0								
1 250	1 250,0			**	1 270,0	**	1 270,0	**	1 270,0
1 320	1 320,0								
1 400	1 400,0			*	1 422,4	*	1 422,4	*	1 422,4
1 500	1 500,0								
1 600	1 600,0			*	1 625,6	**	1 625,6	**	1 625,6
1 700	1 700,0								
1 800	1 800,0			*	1 828,8	*	1 828,8	*	1 828,8
1 900	1 900,0								
2 000	2 000,0					**	2 032,0	**	2 032,0
2 120	2 120,0								
2 240	2 240,0							*	2 275,8
2 360	2 360,0								
2 500	2 500,0							**	2 540,0

1) Effective diameters marked with a double asterisk (**) are especially recommended.

Effective diameters marked with a single asterisk (*) are recommended.

Table 3

Dimensions in millimetres

Groove section	Groove angle, α			
	36°	38°	40°	42°
	Effective diameter, d_e			
9J	$d_e \leq 90$	$90 < d_e \leq 150$	$150 < d_e \leq 300$	$d_e > 300$
15J		$d_e \leq 250$	$250 < d_e \leq 400$	$d_e > 400$
20J		$d_e \leq 335$	$335 < d_e \leq 500$	$d_e > 500$
25J		$d_e \leq 400$	$400 < d_e \leq 560$	$d_e > 560$

Table 4

Groove section	Smallest effective diameter
	mm
9J	67
15J	180
20J	265
25J	315

Annex

Background information

A.1 In this International Standard, the effective width is used as a basic dimension to describe the pulley grooves. For this reason, only the effective diameter of the pulley can be considered as the nominal diameter.

A.2 A series of preferred numbers was considered a good basis on which to grade the diameters and it was decided that this should be the R20 series, which could be complemented, for smaller diameters, by intermediate values from the R40 series. It was also decided that values from the R10 series should be especially recommended.

A.3 As the industry in the USA requires a tolerance of $^{+1,6}_{0}$ % to allow for the difference between inch and millimetre dimensions, the interests of all parties can be covered by choosing, as the maximum effective diameter, the nominal diameter plus:

4 mm for pulleys with groove section 9J,

7 mm for pulleys with groove section 15J,

9,6 mm for pulleys with groove section 20J,

1,6 % for pulleys with groove section 25J.

The minimum effective diameter can be equal to the nominal diameter because all interested parties require positive tolerances only.