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Belt drives — Endless wide V-belts for industrial speed-changers and groove profiles for corresponding pulleys

*Transmissions par courroies — Courroies trapézoïdales larges sans fin pour
variateurs de vitesse industriels et profils de gorge des poulies correspondantes*

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Reference number
ISO 1604 : 1989 (E)

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 1604 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

This second edition cancels and replaces the first edition (ISO 1604:1976), of which it constitutes a technical revision.

Annex A of this International Standard is for information only.

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Belt drives — Endless wide V-belts for industrial speed-changers and groove profiles for corresponding pulleys

1 Scope

This International Standard specifies the principal dimensions of endless wide V-belts for industrial speed-changers, and the groove profiles of corresponding fixed or variable diameter pulleys.

It does not apply to speed-changer belts used either as parts of farm-machines (in particular harvesters), which are standardized in ISO 3410, or for the propulsion of self-propelled vehicles (motor-cycles, scooters, cars).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1081 : 1980, *Drives using V-belts and grooved pulleys — Terminology*.

ISO 9608:1988, *V-belts — Uniformity of belts — Centre distance variation — Specifications and test method*.

3 Definitions and symbols

For the purposes of this International Standard, the terms and symbols relating to drives using V-belts (i.e. belts and grooved pulleys) defined in ISO 1081 apply.

4 Belt designation

The belt designation consists of the letter W and the nominal pitch width of the belt.

The cross-sections are designated as follows:

W16 — W20 — W25 — W31,5 — W40 — W50 — W63 — W80 — W 100

The values of the pitch widths, w_p (expressed in millimetres), are nine consecutive terms from the R10 series of preferred numbers. Should this series of values be considered insufficient, it may be completed

— outside the limits, with other terms from the R10 series of preferred numbers;

— inside the limits, with terms from the R20 series of preferred numbers.

5 Dimensions and tolerances

5.1 Belts

5.1.1 Cross-sections (see figure 1)

The cross-section is characterized by a relative height, T/w_p , of about 0,32.

The pitch line is situated at approximately one-quarter of the height of the profile below the large base of the trapezium.

5.1.2 Dimensions (see figure 1)

The dimensions of the belt cross-sections are given in table 1.

The profile of the cross-section of the free strand of the belt under tension is not imposed; in particular, the angle of the sidewalls and their profile are left to the belt manufacturer's option.

Table 1 — Dimensions of belt cross-sections

Dimensions in millimetres

Belt designation	W16	W20	W25	W31,5	W40	W50	W63	W80	W100
w_p	16	20	25	31,5	40	50	63	80	100
w nom.	17	21	26	33	42	52	65	83	104
T nom.	6	7	8	10	13	16	20	26	32
B nom.	1,5	1,75	2	2,5	3,2	4	5	6,5	8
H nom.	4,5	5,25	6	7,5	9,8	12	15	19,5	24
NOTE — The approximate formulae are as follows : — height, $T = 0,32 w_p$ — height above pitch line, $B = 0,08 w_p = 0,25 T$ — height below pitch line, $H = 0,24 w_p = 0,75 T$									

5.1.3 Belt ride position

The belt ride position under the conditions specified in 6.1.6 shall not exceed the values given in table 2.

Table 2 — Belt ride position

Dimensions in millimetres

Belt designation	W16	W20	W25	W31,5	W40	W50	W63	W80	W100
Ride-in min. above H_1 *) (see figure 6)	0	0	0	0	0	0	0	0	0
max.	1,2	1,8	1,8	1,8	2,4	2,4	3,0	3,0	3,6
*) The ride-in values relate to the checking pulley outer diameters given in table 7. The approximate value of ride-out above b_{min} of service pulleys (see table 5) is given by $0,12 \sqrt{w_p}$.									

5.1.4 Length

Values for the datum length, L_d , are multiples of the pitch width, the multiplier coefficients being eight consecutive terms from the R20 series of preferred numbers (28 to 63 inclusive). The belt lengths and their tolerances are given in table 3.

Table 3 — Belt length

Dimensions in millimetres

Datum length L_d tol.		Belt designation								
		W16	W20	W25	W31,5	W40	W50	W63	W80	W100
450	± 10	x								
500		x								
560	± 12	x	x							
630		x	x							
710	± 14	x	x	x						
800	± 16	x	x	x						
900	± 18	x	x	x	x					
1 000	± 20	x	x	x	x					
1 120	± 22		x	x	x	x				
1 250	± 24		x	x	x	x				
1 400	± 28			x	x	x	x			
1 600	± 32			x	x	x	x			
1 800	± 36				x	x	x	x		
2 000	± 40				x	x	x	x		
2 240	± 44					x	x	x	x	
2 500	± 50					x	x	x	x	
2 800	± 56						x	x	x	x
3 150	± 62						x	x	x	x
3 550	± 70								x	x
4 000	± 80							x	x	x
4 500	± 90								x	x
5 000	± 100								x	x
5 600	± 110									x
6 300	± 120									x
NOTES 1 The allowable deviation on the datum length is about $\pm 2\%$. 2 Box-type speed changers need a closer tolerance, which can be complied with by printing a conventional length symbol on the external face of the belt after checking.										

Should the range of datum lengths given in table 3 be considered insufficient, it may be completed

- outside the limits, with other terms from the R20 series of preferred numbers;
- exceptionally, between two consecutive lengths from table 3, with terms from the R40 series of preferred numbers (especially for box-type speed-changers).