Belt Measuring

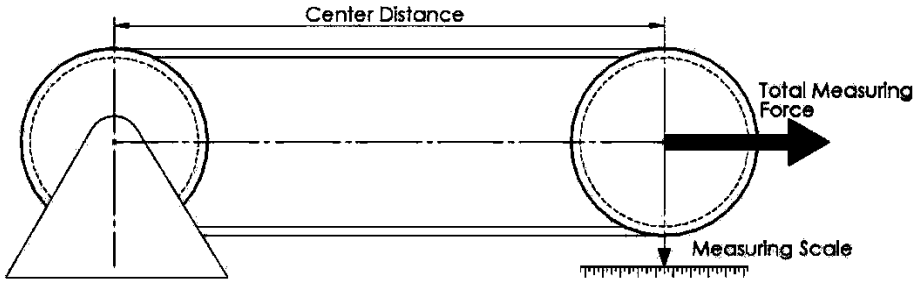
Belts are measured by placing the belt around 2 pulleys of equal diameters (one fixed and one movable), applying a set force, and measuring the distance between the pulley centers. The precise length of the belt is then calculated using the pulley diameter or number of teeth, belt section (which determines if pitch, datum, or effective diameter is used), and center distance. The measuring force and the pulley diameter are dependent on the belt section. Banded V-belts require a set amount of force per rib, which gives the total measuring force. Timing belts have a predetermined total measuring force required for standard widths. The CCV (Center to Center Variation) is the difference between the minimum and maximum center distances as the belt is rotated about the pulleys. The length of the belt is equal to the effective diameter of one measuring pulley plus 2 times the center distance.

Narrow V-Belt Length Tolerances (in)

Standard Length Designation	Permissible Deviation from Standard Length	Matching Limits for One Set	Permissible Center Distance Variation	
			3V, 3XV 5V, 5VX	8V, 8VX
250 - 375	±0.3	0.15	0.047	--
400 - 500	±0.3	0.15	0.063	--
530 - 630	±0.4	0.15	0.063	--
670 - 750	±0.4	0.30	0.063	0.134
800	±0.4	0.30	0.079	0.134
850 - 1000	±0.5	0.30	0.079	0.134
1060 - 1400	±0.6	0.30	0.079	0.134
1500	±0.8	0.30	0.079	0.134
1600 - 1800	±0.8	0.45	0.079	0.134
1900 - 2500	±0.8	0.45	0.098	0.134
2650 - 3000	±0.8	0.60	0.098	0.134
3150 - 3750	±1.0	0.60	0.098	0.134
4000	±1.0	0.75	--	0.134
4250+	±1.2	0.75	--	0.134

V-Ribbed Belt Length Tolerances (in)

Standard Length Designation	Permissible Deviation from Standard Length	Standard Length Designation	Permissible Deviation from Standard Length
180 - 280	±0.2	1310 - 1390	+0.5, -1.1
300 - 380	+0.2 -0.3	1455 - 1610	+0.6, -1.2
400 - 560	+0.2 -0.4	1650	+0.6, -1.3
580 - 655	+0.2 -0.5	1760 - 1830	+0.7, -1.4
690 - 780	+0.3 -0.6	1980 - 2410	+0.8, -1.6
815 - 870	+0.3 -0.7	2560	+0.9, -1.6
900 - 920	+0.4 -0.7	2710	+1.0, -1.8
940 - 1065	+0.4 -0.8	3010	+1.2, -2.4
1115 - 1185	+0.4 -0.9	3310	+1.3, -2.6
1215 - 1230	+0.4 -1.0	3610	+1.4, -2.9



Classical V-Belt Length Tolerances (in)

Standard Length Designation	Permissible Deviation from Standard Length	Matching Limits for One Set	Permissible Center Distance Variation	
			A, AX, B, BX, C, CX	D
26 - 35	±0.6	0.15	0.047	--
38	±0.7	0.15	0.047	--
42 - 60	±0.7	0.15	0.063	--
68 - 75	±0.7	0.30	0.063	--
80 - 85	±0.7	0.30	0.079	--
90 - 144	±0.8	0.30	0.079	0.134
158 - 180	±1.0	0.45	0.079	0.134
195	±1.1	0.45	0.079	0.134
210	±1.1	0.45	0.098	0.134
240	±1.3	0.45	0.098	0.134
270 - 300	±1.6	0.60	0.098	0.134
330 - 360	±2.0	0.60	0.098	0.134
390	±2.0	0.60	0.098	0.134
420+	±3.3	0.75	0.098	0.134

Timing/Synchronous Belt Length Tolerances

Belt Length Designation XL, L, H, XH, XXH	Permissible Deviation from Standard Length (in)	Belt Length Designation 3M, 5M, 8M, 14M	Permissible Deviation from Standard Length (mm)	
			Single Sided	Double Sided
60 - 100	±0.016	127 - 254	±0.40	+0.80, -0.60
110 - 150	±0.018	254 - 381	±0.46	+0.92, -0.69
160 - 200	±0.020	381 - 508	±0.50	+1.00, -0.75
210 - 300	±0.024	508 - 762	±0.60	+1.20, -0.90
322 - 390	±0.026	762 - 1016	±0.66	+1.32, -0.99
420 - 480	±0.030	1016 - 1270	±0.72	+1.44, -1.08
507 - 600	±0.032	1270 - 1524	±0.82	+1.64, -1.23
630 - 700	±0.034	1524 - 1778	±0.86	+1.74, -1.29
750 - 800	±0.036	1778 - 2032	±0.92	+1.84, -1.38
840 - 900	±0.038	2032 - 2286	±0.98	+1.96, -1.47
980 - 1000	±0.040	2286 - 2540	±1.04	+2.08, -1.56
1100	±0.042	2540 - 2794	±1.08	+2.16, -1.62
1120 - 1200	±0.044	2794 - 3048	±1.12	+2.24, -1.68
1250 - 1260	±0.046	3048 - 3302	±1.16	+2.32, -1.74
1400	±0.048	3302 - 3556	±1.20	+2.40, -1.80
1540 - 1600	±0.052	3556 - 3810	±1.26	+2.52, -1.89
1700	±0.054	3810 - 4064	±1.32	+2.64, -1.98
1750+	±0.056	4064 - 4318	±1.38	+2.76, -2.07
		4318 - 4572	±1.44	+2.88, -2.16
		4572 - 4826	±1.50	+3.00, -2.25
		4826 - 5080	±1.56	+3.12, -2.34
		5080 - 5334	±1.62	+3.24, -2.43
		5334 - 5588	±1.68	+3.36, -2.52
		5588 - 5842	±1.74	+3.48, -2.61
		5842 - 6096	±1.80	+3.60, -2.70
		6096 - 6350	±1.86	+3.72, -2.79
		6350 - 6604	±1.92	+3.84, -2.88
		6604 - 6860	±1.98	+3.96, -2.97