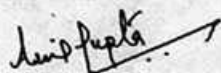


Looking toward tomorrow with fresh visions

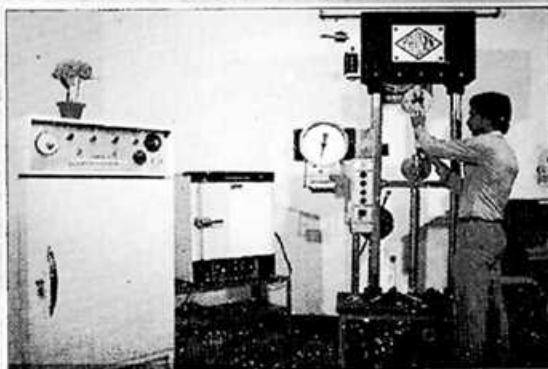
Universal HI-LIFE Polyester Cord V-Belts are the result of years of experience and practical exercise combining optimum strength and flexibility with marked resistance to wear.

Right belts for the job are produced by studying the performance under actual operating conditions. **Universal HI-LIFE** has been specially developed to cater to an ever increasing demand of quality conscious industries for higher and higher standards of working performance. Thus, this premium quality V-Belt that conforms to IS:2494 and International Specifications DIN 7753, has fostered many engineers and designers by providing answers to troublesome drive problems.

Pulleys and couplings that are properly machined for easy installation.



Anil Gupta
President



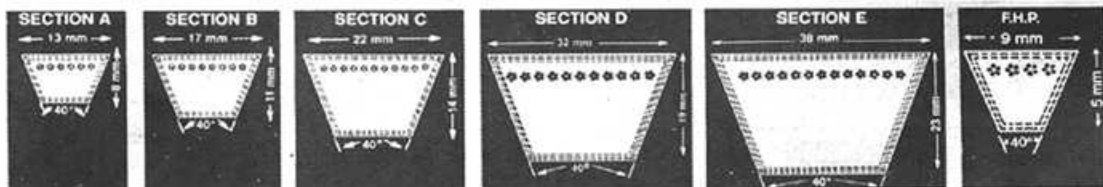
In-house evaluation of Finished Belt on Tensile Testing Machine in the Lab.

VEE - BELTS

Vee Belts are used for motor to pulley power transmission in threshers, harvester combines, automobiles, rice mills, flour mills, textiles, sugar, fertilizer, cement, coal, thermal power plants, paper mills, ceramic industries, and other industrial applications and "Universal" offers polyester cord v-belts combining optimum strength and flexibility with marked resistance to wear.

RANGE OF SECTION & SIZES (Conforming to IS : 2494, DIN 7753 and BS 3790)

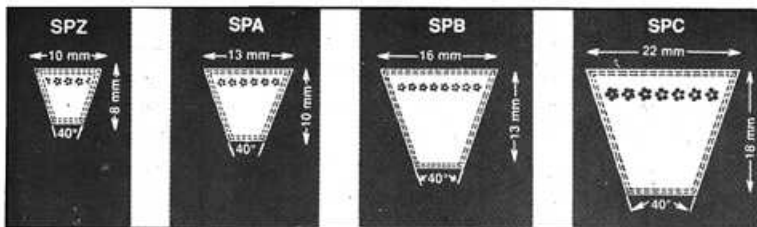
CLASSICAL



Range of Nominal Inside Length

Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
16-180	406-4572	24-360	610-9144	36-600	916-15240	75-600	1905-15240	158-600	4013-15240		2170-2664

SPACE SAVER WEDGE BELTS



Range of Nominal Inside Length

mm	mm	mm	mm
630-3550	800-4500	1250-12000	2000-12000

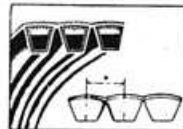
Poly Rib belts in sections, J, L & M with pitch length range upto 600" and no. of ribs upto 64 for usage in machine tools, grinders, vibrators, etc. which are truly precision built eliminating matching problem and reducing downtime & longer life signifying economy in terms of reduced replacement costs.

Poly Rib Belts



Banded Belts

For applications where pulsating or shock loads cause instability in conventional V-belts and / or space saver wedge belts. The banded belt has enough lateral rigidity to eradicate problems caused by either belts turning over or whipping by joining together a number of belts with a tie band.



Compound processing in mixing mill.



LENGTH CODING SYSTEM When the code number 50 is shown on the cellophane affixed on each V-belt, this indicates that the actual length coincides with the nominal length printed on the belt. Each deviation of 2.5 mm from the nominal length is represented by one unit. For instance, a v-belt with size 100" coded 50 is exactly 100 inches inside length. If the code is 49, then it is 99.9" and if the code is 51, then it is 100.1" inside length.



MATCHED SETS The question of matched sets arises in case of multi V-belt drive as the length of V-belt should be matched in order to obtain even distribution of load. A 'Matched Set' is simply a set of such belts, the length of which are within the specified limits, so that these can be used together. The table as shown depicts the permissible length deviations in consecutive grading numbers marked near the size code which represents the exact length measured under specified operating tensions.

Section	Belt Pitch Length Exceeds Inside Length By (mm)	Pulley Outside Diameter Exceeds Pitch Diameter By (mm)
A	36	6.6
B	43	8.4
C	56	11.4
D	79	16.2
E	92	19.3
SPZ		4.0
SPA		6.0
SPB		7.0
SPC		9.6

Nominal Inside Length (mm)	Range (inches)	No. of consecutive grading number (s) to be used to make a matched set
457 to 1076	18-46	1
1702 to 2286	67-90	2
2311 to 3048	91-120	3
3073 to 4572	121-160	4
4597 to 9093	181-358	5
9119 and above	359 and above	6

DRIVE DESIGN FORMULAE

$$L = 2C + 1.57(D+d) + \frac{(D-d)^2}{4C}$$

$$C = A + \sqrt{A^2 - B}$$

$$A = \frac{L - 0.3925(D+d)}{4}$$

$$B = \frac{(D-d)^2}{8}$$

$$\text{Number of belts, } N = \frac{P \times F_s}{R \times F_l \times F_c}$$

where
 L = Belt Pitch Length, mm
 C = Centre Distance, mm
 D = Pitch dia. of large pulley, mm
 d = Pitch dia. of small pulley, mm
 R = Power Rating per belt, KW
 Fl = Belt Length Correction Factor
 Fc = Arc of contact correction Factor
 Fs = Service Factor
 P = Drive Power in KW.

Table 1 V-BELT CROSS SECTION SELECTION TABLE

Normal Horse Power	Speed of Faster Shaft i.e. Motor Speed RPM			
	720 and below	900	1200	1800
½ to ½	A	A	A	A
2 to 3	A or B	A or B	A or B	A or B
5	A or B	A or B	A or B	A or B
10	A or B	A or B	A or B	A or B
15	C	B or C	B	B
20	C	C	C	B or C
25 to 30	C	C	C	C
40	D	C or D	C or D	C
50	D	C or D	C or D	C or D
60	D	C or D	C or D	C or D
75	D	C or D	C or D	C or D

Table 2 RECOMMENDED PULLEY PITCH DIAMETERS

V-Belt Section	Permissible Min. Pulley Pitch Diameter		Recommended Min. Pulley Pitch Diameter	
	mm	inch	mm	inch
A	75	3	95	3.8
B	125	5	145	5.8
C	200	8	225	9
D	315	12.6	350	14
E	500	20	550	22
SPZ	-	-	63	2.5
SPA	-	-	90	3.6
SPB	-	-	160	6.4
SPC	-	-	224	9.0

1 KW = H.P. x 0.746

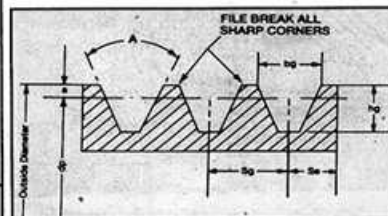
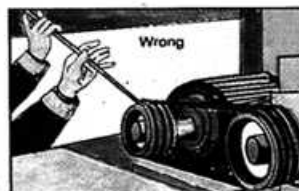
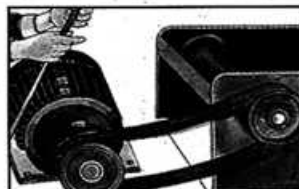
Please note that with smaller pulley diameter than those recommended, the life of belt is reduced considerably and also the transmitting power decreases. It is necessary to ensure that at least belt run on pulleys that are not below the permissible minimum diameter for each section.

Table 3 STANDARD PULLEY DIMENSIONS

Groove Cross-section	Pulley Pitch Diameter dp (mm)	Groove Angle A degree ± 0.5°	Minimum Top width of groove g (mm)	Minimum Groove depth below outside diameter hg (mm)	Centre to Centre of grooves Sg (mm)	Edge of Pulley of First Groove Centre (mm)
SPZ	Upto 80	34	9.7	11.0	12 ± 0.3	8.0 ± 1.0
	Over 80	38	9.9			
A	Upto 118	34	13.0			10.0 ± 2.0
SPA	Over 118	34	13.3	13.8	15 ± 0.3	- 1.0
B	Upto 190	34	16.6			12.5 ± 2.0
SPB	Over 190	38	16.9	17.5	19 ± 0.4	- 1.0
C	Upto 315	38	22.9	23.8	25.5 ± 0.5	- 1.0
SPC	Over 315	38	22.9	23.8	25.5 ± 0.5	- 1.0
D	Upto 475	36	32.2			24.0 + 3.0
	Over 475	38	32.6	28.0	37.0 ± 0.6	- 1.0
E	Upto 630	36	38.3			29 + 4.0
	Over 630	38	38.6	33.0	44.5 ± 0.7	- 1.0

When the pulley are to be used for V-belt sections, A, B or C only, dimension hg may be reduced by 20%

Universal urges to use standard premium quality Vee Belt Pulleys either conventional type or new generation quick-fit taper lock bush type manufactured by the co. to drag better mileage from V-belt drives.



INFORMATION TO BE SUPPLIED WITH ENQUIRY OR ORDER

(i) Section (ii) Size in inches or mm (iii) Quantity in nos.

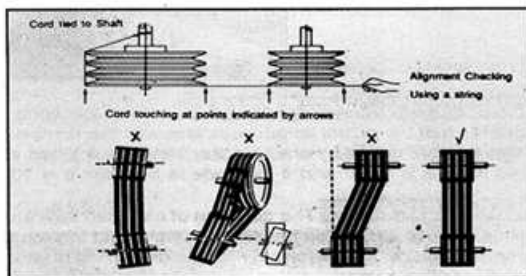
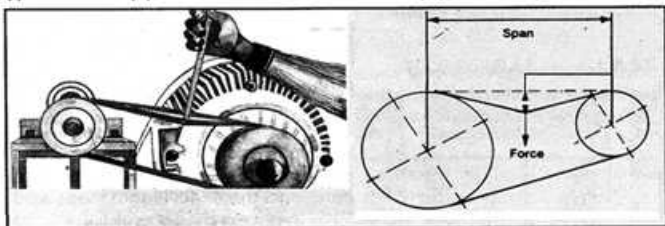


Table 4 SERVICE FACTORS FOR TYPE OF DRIVEN MACHINES

To correct the horse power rating of the V-belt drive for the type of service on which is to be used, multiply the motor horse power transmitted by the power correction factor as given in the table, taking into account type of driven machine and the operational hours per day.

SPEED INCREASING DRIVES		TYPES OF PRIME MOVERS					
		Soft Starts			Heavy Starts		
For Speed Increasing drives, Multiply Fs with 1.00 for speed Ratio 1.00 to 1.24 1.05 for speed Ratio 1.25 to 1.74 1.11 for speed Ratio 1.75 to 2.49 1.18 for speed Ratio 2.50 to 3.49 1.25 for speed Ratio 3.50 and Over		Electric Motors (Normal Torque) : A.C. - Star-Delta Start D.C. - Shut wound I.C. Engines with 4 or more cylinder all prime movers fitted with centrifugal clutches, fluid or powder couplings			Electric Motors (High Torque) : A.C. Direct on-line start D.C. - Series and compound wound I.C. Engines with less than 4 cylinders Line shafts, clutches.		
Types of Driven Machines		Operational Hours per day			Operational Hours per day		
Light Duty	Agitators (Uniform density), Blowers, Exhausters, Centrifugal pumps and Compressors, Fans upto 7.5 kw and Belt conveyors (light duty).	Upto 10 h	Over 10 to 16 h	Over 16 h	Upto 10 h	Over 10 to 16 h	Over 16 h
Medium Duty	Agitators and Mixers (Variable density), Blowers, Exhausters and fans and Dough mixers over 7.5 kw, positive displacement rotary pumps and compressors. Belt conveyors (Not uniformly loaded), Generators, line-shafts, Laundry machinery, Machine-tools, punches, presses and shears, Printing machinery, Revolving and Vibrating screens.	1.0	1.1	1.2	1.1	1.2	1.3
Heavy Duty	Brick machinery, Bucket elevators, Exciters, Reciprocating compressors and pumps, Conveyors (drag-pan-screw), Hammer mills, Paper mill beaters, Pulverizers, Saw mill and Wood working machinery, Textile machinery and Rubber machinery.	1.1	1.2	1.3	1.2	1.3	1.4
Extra Heavy Duty	Crushers (gyratory-jaw-roll), Mills (Ball-rod-tube), hoists, Rubber (calenders, extruders mills).	1.2	1.3	1.4	1.4	1.5	1.6
		1.3	1.4	1.5	1.5	1.6	1.8

Table 5 ARC OF CONTACT CORRECTION FACTORS

D-d C	Factor Fc	Arc of contact on smaller pulley, degrees	D-d C	Factor Fc	Arc of contact on smaller pulley, degrees	D-d C	Factor Fc	Arc of contact on smaller pulley, degrees
0.00	1.00	180	0.50	0.93	151	1.00	0.82	120
0.05	0.99	177	0.55	0.92	148	1.05	0.81	117
0.10	0.99	174	0.60	0.91	145	1.10	0.80	113
0.15	0.98	171	0.65	0.90	142	1.15	0.78	110
0.20	0.97	169	0.70	0.89	139	1.20	0.77	106
0.25	0.97	166	0.75	0.88	136	1.25	0.75	103
0.30	0.96	163	0.80	0.87	133	1.30	0.73	99
0.35	0.95	160	0.85	0.86	130	1.35	0.72	95
0.40	0.94	157	0.90	0.85	127	1.40	0.70	91
0.45	0.93	154	0.95	0.83	123	1.45	0.68	87

Arc of contact below 120° should not please be used unless complete drive details are submitted to HIC International Co. Inc., New Delhi for confirmation.

Table 6 CORRECTION FACTORS FOR BELT LENGTH

Factor	Belt Length, mm								
	SPZ	A	SPA	B	SPB	C	SPC	D	E
0.80	-	610	-	889	-	1295	-	-	-
0.81	-	660	-	911	-	1324	-	-	-
0.82	-	711	-	933	-	1353	-	-	-
0.83	630	762	800	955	-	1382	-	-	-
0.84	-	813	850	977	-	1411	-	-	-
0.85	710	864	900	1000	-	1440	-	-	-
0.86	-	915	950	1022	1250	1727	-	-	-
0.87	800	966	1000	1044	1300	1756	2000	3048	-
0.88	-	1017	1050	1067	1350	1785	2050	3098	-
0.89	900	1068	1120	1089	1400	1814	2100	3148	-
0.90	-	1119	1150	1111	1450	1843	2150	3198	-
0.91	-	1170	1200	1133	1500	1872	2200	3248	-
0.92	1000	1221	1250	1155	1550	1901	2250	3298	-
0.93	-	1272	1300	1177	1600	1930	2300	3348	-
0.94	1140	1323	1350	1199	1650	1959	2350	3398	-
0.95	-	1374	1400	1221	1700	1988	2400	3448	-
0.96	1250	1425	1450	1243	1750	2017	2450	3498	-
0.97	-	1476	1500	1265	1800	2046	2500	3548	-
0.98	1400	1527	1550	1287	1850	2075	2550	3598	-
0.99	-	1578	1600	1309	1900	2104	2600	3648	-
1.00	1600	1629	1650	1331	1950	2133	2650	3698	-
1.01	-	1680	1700	1353	2000	2162	2700	3748	-
1.02	1800	1731	1750	1375	2050	2191	2750	3798	-
1.03	-	1782	1800	1397	2100	2220	2800	3848	-
1.04	2000	1833	1850	1419	2150	2249	2850	3898	-
1.05	-	1884	1900	1441	2200	2278	2900	3948	-
1.06	2240	1935	1950	1463	2250	2307	2950	3998	-
1.07	-	1986	2000	1485	2300	2336	3000	4048	-
1.08	2500	2037	2050	1507	2350	2365	3050	4098	-
1.09	-	2088	2100	1529	2400	2394	3100	4148	-
1.10	2800	2139	2150	1551	2450	2423	3150	4198	-
1.11	-	2190	2200	1573	2500	2452	3200	4248	-
1.12	3150	2241	2250	1595	2550	2481	3250	4298	-
1.13	-	2292	2300	1617	2600	2510	3300	4348	-
1.14	-	2343	2350	1639	2650	2539	3350	4398	-
1.15	3550	2394	2400	1661	2700	2568	3400	4448	-
1.16	-	2445	2450	1683	2750	2597	3450	4498	-
1.17	-	2496	2500	1705	2800	2626	3500	4548	-
1.18	-	2547	2550	1727	2850	2655	3550	4598	-
1.19	-	2598	2600	1749	2900	2684	3600	4648	-
1.20	-	2649	2650	1771	2950	2713	3650	4698	-
1.21	-	2700	2700	1793	3000	2742	3700	4748	-
1.22	-	2751	2750	1815	3050	2771	3750	4798	-
1.23	-	2802	2800	1837	3100	2800	3800	4848	-
1.24	-	2853	2850	1859	3150	2829	3850	4898	-

Table 7 (R) POWER RATING (KW) PER BELT FOR SMALL PULLEY PITCH DIAMETER

RPM of smaller pulley	Smaller pulley pitch diameter, mm																						
	67	71	75	80	85	90	95	100	106	112	118	125	132	140	150	160	170	180	200	225	250	280	315
SPZ	0.56	0.65	0.76	0.84	0.91	0.99	1.08	1.19	1.30	1.46	1.57	1.73	1.87	2.03	2.18	2.38	2.58	2.83	3.12	3.46	3.85	4.29	4.78
	0.70	0.83	0.95	1.08	1.24	1.40	1.57	1.73	1.89	2.07	2.23	2.43	2.65	2.86	3.08	3.34	3.64	3.98	4.36	4.78	5.24	5.74	6.28
	0.87	1.03	1.19	1.35	1.51	1.73	1.94	2.16	2.43	2.61	2.88	3.14	3.40	3.73	4.00	4.34	4.72	5.14	5.60	6.08	6.58	7.12	7.68
	1.07	1.27	1.47	1.67	1.91	2.19	2.51	2.87	3.27	3.71	4.19	4.71	5.27	5.87	6.51	7.19	7.91	8.67	9.47	10.31	11.19	12.11	13.07
A	0.67	0.75	0.83	0.91	0.99	1.09	1.18	1.28	1.39	1.50	1.62	1.73	1.87	2.03	2.18	2.38	2.58	2.83	3.12	3.46	3.85	4.29	4.78
	0.84	0.95	1.05	1.16	1.25	1.39	1.50	1.62	1.77	1.91	2.06	2.21	2.38	2.55	2.73	2.93	3.14	3.36	3.60	3.86	4.14	4.44	4.76
	1.04	1.20	1.38	1.54	1.73	1.91	2.08	2.26	2.46	2.66	2.88	3.11	3.34	3.59	3.84	4.11	4.40	4.70	5.02	5.36	5.72	6.10	6.50
	1.27	1.49	1.73	1.98	2.28	2.61	2.97	3.34	3.78	4.21	4.69	5.02	5.51	5.94	6.48	6.99	7.56	8.16	8.79	9.45	10.14	10.86	11.61
SPA	0.83	0.91	0.99	1.09	1.18	1.28	1.39	1.50	1.62	1.73	1.87	2.03	2.18	2.38	2.58	2.83	3.12	3.46	3.85	4.29	4.78	5.24	5.74
	1.04	1.20	1.38	1.54	1.73	1.91	2.08	2.26	2.46	2.66	2.88	3.11	3.34	3.59	3.84	4.11	4.40	4.70	5.02	5.36	5.72	6.10	6.50
	1.27	1.49	1.73	1.98	2.28	2.61	2.97	3.34	3.78	4.21	4.69	5.02	5.51	5.94	6.48	6.99	7.56	8.16	8.79	9.45	10.14	10.86	11.61
	1.54	1.80	2.09	2.42	2.74	3.06	3.43	3.82	4.25	4.74	5.29	5.82	6.32	6.82	7.36	7.96	8.60	9.28	10.00	10.76	11.56	12.39	13.25
B	1.04	1.20	1.38	1.54	1.73	1.91	2.08	2.26	2.46	2.66	2.88	3.11	3.34	3.59	3.84	4.11	4.40	4.70	5.02	5.36	5.72	6.10	6.50
	1.27	1.49	1.73	1.98	2.28	2.61	2.97	3.34	3.78	4.21	4.69	5.02	5.51	5.94	6.48	6.99	7.56	8.16	8.79	9.45	10.14	10.86	11.61
	1.54	1.80	2.09	2.42	2.74	3.06	3.43	3.82	4.25	4.74	5.29	5.82	6.32	6.82	7.36	7.96	8.60	9.28	10.00	10.76	11.56	12.39	13.25
	1.83	2.10	2.35	2.60	2.84	3.10	3.39	3.61	3.95	4.25	4.58	4.94	5.31	5.65	6.05	6.48	6.95	7.46	8.00	8.57	9.16	9.78	10.43
SPB	1.27	1.49	1.73	1.98	2.28	2.61	2.97	3.34	3.78	4.21	4.69	5.02	5.51	5.94	6.48	6.99	7.56	8.16	8.79	9.45	10.14	10.86	11.61
	1.54	1.80	2.09	2.42	2.74	3.06	3.43	3.82	4.25	4.74	5.29	5.82	6.32	6.82	7.36	7.96	8.60	9.28	10.00	10.76	11.56	12.39	13.25
	1.83	2.10	2.35	2.60	2.84	3.10	3.39	3.61	3.95	4.25	4.58	4.94	5.31	5.65	6.05	6.48	6.95	7.46	8.00	8.57	9.16	9.78	10.43
	2.16	2.46	2.77	3.07	3.37	3.67	3.97	4.27	4.57	4.87	5.17	5.47	5.77	6.07	6.37	6.67	6.97	7.27	7.57	7.87	8.17	8.47	8.77
C	1.54	1.80	2.09	2.42	2.74	3.06	3.43	3.82	4.25	4.74	5.29	5.82	6.32	6.82	7.36	7.96	8.60	9.28	10.00	10.76	11.56	12.39	13.25
	1.83	2.10	2.35	2.60	2.84	3.10	3.39	3.61	3.95	4.25	4.58	4.94	5.31	5.65	6.05	6.48	6.95	7.46	8.00	8.57	9.16	9.78	10.43
	2.16	2.46	2.77	3.07	3.37	3.67	3.97	4.27	4.57	4.87	5.17	5.47	5.77	6.07	6.37	6.67	6.97	7.27	7.57	7.87	8.17	8.47	8.77
	2.50	2.84	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77
D	1.83	2.10	2.35	2.60	2.84	3.10	3.39	3.61	3.95	4.25	4.58	4.94	5.31	5.65	6.05	6.48	6.95	7.46	8.00	8.57	9.16	9.78	10.43
	2.16	2.46	2.77	3.07	3.37	3.67	3.97	4.27	4.57	4.87	5.17	5.47	5.77	6.07	6.37	6.67	6.97	7.27	7.57	7.87	8.17	8.47	8.77
	2.50	2.84	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77
	2.84	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77	10.10
E	2.16	2.46	2.77	3.07	3.37	3.67	3.97	4.27	4.57	4.87	5.17	5.47	5.77	6.07	6.37	6.67	6.97	7.27	7.57	7.87	8.17	8.47	8.77
	2.50	2.84	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77
	2.84	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77	10.10
	3.17	3.50	3.83	4.16	4.49	4.82	5.15	5.48	5.81	6.14	6.47	6.80	7.13	7.46	7.79	8.12	8.45	8.78	9.11	9.44	9.77	10.10	10.43

$$\text{Belt Speed (feet per minute)} = \left[\frac{\text{Pitch Diameter of Drive Sheave in Inches}}{\text{Pitch Diameter of Prime Mover}} \right] \times \text{R.P.M. of Prime Mover} \times 0.262$$

