



PowerGrip® GT®2 Belt Drives – Twin Power

Twin Power Belt Drive Systems

Belt Construction

Gates Twin Power Belts have teeth on both sides to provide synchronization from both driving surfaces. This special feature makes possible unique drive designs such as multipoint drives, rotation reversal with one belt, serpentine drives, etc. It may also provide solutions to other difficult design problems.

Twin Power Belts are similar in construction to standard synchronous belts, including nylon-faced teeth on both sides. This construction uses essentially the same design parameters as standard synchronous belts. Gates 3mm and 5mm pitch Twin Power PowerGrip® GT®2 belts have helically-wound fiberglass tension members embedded in a Neoprene body with the belt teeth faced with a tough wear-resistant nylon fabric. A unique feature of this construction is that Gates Twin Power belts can transmit their full rated load on either the front or back side.

As shown below, three principal dimensions of a belt (Pitch, Pitch Length and Width) in millimeters are used to specify a Twin Power PowerGrip® GT®2 belt:

TP Twin Power	3MR Pitch	450 Pitch Length	09 Width
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Belt pitch is the distance in millimeters between two adjacent tooth centers as measured on the pitch line of the belt. Belt pitch length is the total length (circumference) in millimeters as measured along the pitch line. The theoretical pitch line of a GT belt lies within the tensile member.

PowerGrip® GT®2 drives have a higher load capacity than PowerGrip® HTD® and PowerGrip® Timing drives. They also feature equivalent or better backlash characteristics when compared to PowerGrip® Timing drives. These attributes make PowerGrip® GT®2 the drive of choice for today's design engineers.

PowerGrip® GT®2 belts must run in PowerGrip® GT®2 sprockets. PowerGrip GT®2 belts are not compatible with PowerGrip® HTD® sprockets.

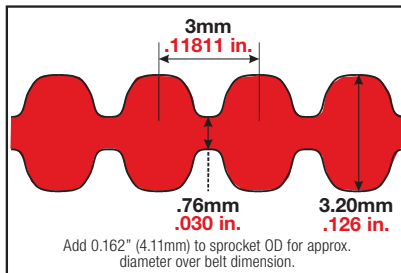
Made-To-Order Twin Power Belts

Additional sizes of Twin Power PowerGrip® GT®2 Belts are available on a made-to-order basis in pitch lengths from 385mm (15.2 in) up to lengths as great as tooling is available. If a mold is not available for the desired pitch length, tooling will be required.

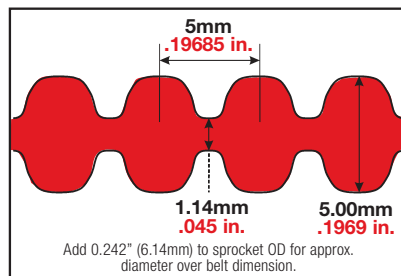
Belts in nonstandard widths are available on a made-to-order basis.

Contact Customer Service for all made-to-order belt needs.

3M PowerGrip GT2 Twin Power – Reference Dimensions



5M PowerGrip GT2 Twin Power – Reference Dimensions





PowerGrip® GT®2 Belt Drives – Twin Power – continued

PowerGrip® GT®2 Belt Lengths and Widths

3mm Pitch Belt Lengths

Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth
TP3MR-372	372	14.646	124	TP3MR-483	483	19.016	161	TP3MR-630	630	24.803	210	TP3MR-891	891	35.079	297
TP3MR-375	375	14.764	125	TP3MR-486	486	19.134	162	TP3MR-633	633	24.921	211	TP3MR-900	900	35.433	300
TP3MR-381	381	15.000	127	TP3MR-489	489	19.252	163	TP3MR-639	639	25.157	213	TP3MR-915	915	36.024	305
TP3MR-384	384	15.118	128	TP3MR-492	492	19.370	164	TP3MR-645	645	25.394	215	TP3MR-945	945	37.205	315
TP3MR-387	387	15.236	129	TP3MR-501	501	19.724	167	TP3MR-648	648	25.512	216	TP3MR-951	951	37.441	317
TP3MR-390	390	15.354	130	TP3MR-504	504	19.843	168	TP3MR-654	654	25.748	218	TP3MR-981	981	38.622	327
TP3MR-393	393	15.472	131	TP3MR-510	510	20.079	170	TP3MR-657	657	25.866	219	TP3MR-1002	1002	39.449	334
TP3MR-396	396	15.591	132	TP3MR-513	513	20.197	171	TP3MR-663	663	26.102	221	TP3MR-1026	1026	40.394	342
TP3MR-399	399	15.709	133	TP3MR-519	519	20.433	173	TP3MR-669	669	26.339	223	TP3MR-1035	1035	40.748	345
TP3MR-405	405	15.945	135	TP3MR-525	525	20.669	175	TP3MR-684	684	26.929	228	TP3MR-1050	1050	41.339	350
TP3MR-411	411	16.181	137	TP3MR-528	528	20.787	176	TP3MR-687	687	27.047	229	TP3MR-1056	1056	41.575	352
TP3MR-414	414	16.299	138	TP3MR-531	531	20.906	177	TP3MR-696	696	27.402	232	TP3MR-1062	1062	41.811	354
TP3MR-417	417	16.417	139	TP3MR-537	537	21.142	179	TP3MR-711	711	27.992	237	TP3MR-1080	1080	42.520	360
TP3MR-420	420	16.535	140	TP3MR-552	552	21.732	184	TP3MR-735	735	28.937	245	TP3MR-1125	1125	44.291	375
TP3MR-426	426	16.772	142	TP3MR-558	558	21.969	186	TP3MR-738	738	29.055	246	TP3MR-1155	1155	45.472	385
TP3MR-432	432	17.008	144	TP3MR-564	564	22.205	188	TP3MR-750	750	29.528	250	TP3MR-1191	1191	46.890	397
TP3MR-435	435	17.126	145	TP3MR-570	570	22.441	190	TP3MR-753	753	29.646	251	TP3MR-1263	1263	49.724	421
TP3MR-438	438	17.244	146	TP3MR-576	576	22.677	192	TP3MR-786	786	30.945	262	TP3MR-1335	1335	52.559	445
TP3MR-444	444	17.480	148	TP3MR-585	585	23.031	195	TP3MR-795	795	31.299	265	TP3MR-1500	1500	59.055	500
TP3MR-447	447	17.598	149	TP3MR-591	591	23.268	197	TP3MR-822	822	32.362	274	TP3MR-1512	1512	59.528	504
TP3MR-459	459	18.071	153	TP3MR-597	597	23.504	199	TP3MR-837	837	32.953	279	TP3MR-1536	1536	60.472	512
TP3MR-465	465	18.307	155	TP3MR-600	600	23.622	200	TP3MR-840	840	33.071	280	TP3MR-1587	1587	62.480	529
TP3MR-468	468	18.425	156	TP3MR-606	606	23.858	202	TP3MR-843	843	33.189	281	TP3MR-1956	1956	77.008	652
TP3MR-471	471	18.543	157	TP3MR-609	609	23.976	203	TP3MR-873	873	34.370	291	TP3MR-2004	2004	78.898	668
TP3MR-474	474	18.661	158	TP3MR-612	612	24.094	204	TP3MR-882	882	34.724	294	TP3MR-2061	2061	81.142	687
TP3MR-480	480	18.898	160	TP3MR-627	627	24.685	209								

All sizes are made to order. Contact Gates Customer Service for availability.

3mm Pitch Stock Belt Widths

Belt Width Code	Belt Width (mm)	Belt Width (in)
06	6	0.236
09	9	0.354
15	15	0.591

5mm Pitch Belt Lengths

Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth	Description	Pitch Length (mm)	(in)	No. of Teeth
TP5MR-400	400	15.748	80	TP5MR-765	765	30.118	153	TP5MR-1125	1125	44.291	225	TP5MR-1790	1790	70.472	358
TP5MR-405	405	15.945	81	TP5MR-790	790	31.102	158	TP5MR-1150	1150	45.276	230	TP5MR-1800	1800	70.866	360
TP5MR-425	425	16.732	85	TP5MR-800	800	31.496	160	TP5MR-1195	1195	47.047	239	TP5MR-1895	1895	74.606	379
TP5MR-450	450	17.717	90	TP5MR-815	815	32.087	163	TP5MR-1250	1250	49.213	250	TP5MR-1945	1945	76.575	389
TP5MR-500	500	19.685	100	TP5MR-830	830	32.677	166	TP5MR-1270	1270	50.000	254	TP5MR-1980	1980	77.953	396
TP5MR-535	535	21.063	107	TP5MR-835	835	32.874	167	TP5MR-1295	1295	50.984	259	TP5MR-2000	2000	78.740	400
TP5MR-565	565	22.244	113	TP5MR-850	850	33.465	170	TP5MR-1300	1300	51.181	260	TP5MR-2110	2110	83.071	422
TP5MR-575	575	22.638	115	TP5MR-870	870	34.252	174	TP5MR-1375	1375	54.134	275	TP5MR-2250	2250	88.583	450
TP5MR-580	580	22.835	116	TP5MR-890	890	35.039	178	TP5MR-1420	1420	55.906	284	TP5MR-2525	2525	99.409	505
TP5MR-600	600	23.622	120	TP5MR-900	900	35.433	180	TP5MR-1450	1450	57.087	290	TP5MR-2760	2760	108.661	552
TP5MR-625	625	24.606	125	TP5MR-925	925	36.417	185	TP5MR-1575	1575	62.008	315	TP5MR-3120	3120	122.835	624
TP5MR-650	650	25.591	130	TP5MR-950	950	37.402	190	TP5MR-1595	1595	62.795	319	TP5MR-3170	3170	124.803	634
TP5MR-700	700	27.559	140	TP5MR-975	975	38.386	195	TP5MR-1600	1600	62.992	320	TP5MR-3200	3200	125.984	640
TP5MR-710	710	27.953	142	TP5MR-985	985	38.780	197	TP5MR-1635	1635	64.370	327	TP5MR-3430	3430	135.039	686
TP5MR-740	740	29.134	148	TP5MR-1000	1000	39.370	200	TP5MR-1690	1690	66.535	338	TP5MR-3800	3800	149.606	760
TP5MR-745	745	29.331	149	TP5MR-1050	1050	41.339	210	TP5MR-1720	1720	67.717	344				
TP5MR-750	750	29.528	150	TP5MR-1115	1115	43.898	223	TP5MR-1755	1755	69.094	351				

All sizes are made to order. Contact Gates Customer Service for availability.

5mm Pitch Stock Belt Widths

Belt Width Code	Belt Width (mm)	Belt Width (in)
09	9	0.354
15	15	0.591
25	25	0.984





PowerGrip® GT®2, HTD® and Timing Belt

Drive Selection Procedure – Twin Power

Step 1. Determine design load.

Service factors between 1.5 and 2.0 are generally recommended when designing small pitch synchronous drives. Knowledge of drive loading characteristics should influence the actual value selected. A higher service factor should be selected for applications with high peak loads, high operating speeds, unusually severe operating conditions, etc. Lower service factors can be used when the loading is smooth, well defined, etc. and the reliability is less critical. Some designs may require service factors outside the 1.5 to 2.0 range, depending upon the nature of the application. Contact Gates Product Application Engineering for additional information.

Stall torque of the driveR, or peak torque of the driveN unit, may be part of the nameplate data. If not, calculate Torque (Q) by using the formulas below. Determine the design torque or design power load for each driveN component in the belt drive system.

$$Q \text{ (lb - in)} = \frac{63,025 \times \text{Shaft HP}}{\text{Shaft RPM,}}$$

$$Q \text{ (lb - in)} = 8.85 \times Q \text{ (N - m) or}$$

$$Q \text{ (oz - in)} = 16 \times Q \text{ (lb - in)}$$

$$\text{Peak Design Load} = \text{Load} \times \text{Service Factor}$$

Sum all design loads from each of the driveN components together for a total design load value.

NOTE: When performing drive calculations based upon torque loads, drive input/output power is constant but drive input/output torque is not. Drive input/output torque is a function of the speed ratio. Drive designs should be based upon the smaller, faster sprocket, at the torque load calculated for its operating speed. These critical drive parameters should be used for all engineering calculations. See engineering calculations on Page 103 for additional formulas and unit conversions.

Step 2. Determine belt pitch and select sprockets.

- A. Select Belt Pitch by using the Belt Pitch Selection Guide on pages 25, 41 and 53.

- B. Determine the speed ratios by dividing the larger speed, Sprocket Pitch Diameter or Sprocket Groove Number by the lesser speed, Sprocket Pitch Diameter or Sprocket Groove Number.

- C. Refer to the appropriate Sprocket Diameter Tables on pages 29-31, pages 44-45 or page 53. Select sprockets based upon speed ratio and drive requirements. Use stock sprocket sizes whenever possible.

- D. Check the Belt Speed, V, of the smaller sprocket selected, using the following formula:

$$V \text{ (fpm)} = 0.262 \times \text{Sprocket PD (in)} \times \text{Sprocket RPM}$$

$$V \text{ (m/s)} = 0.0000524 \times \text{Sprocket PD (mm)} \times \text{Sprocket RPM}$$

and,

$$\text{m/s} = 0.00508 \times \text{fpm}$$

NOTE: Belt speeds in excess of 6,500 fpm (33.02 m/s) require special sprocket materials and dynamic balancing.

Step 3. Belt length in a multi-point or serpentine drive layout can be best determined using either graphical methods or computer software. For computer aided belt drive design assistance, contact Gates Product Application Engineering for assistance.

Using the calculated range of pitch lengths, select a belt of the proper length from the appropriate belt length table. Use a standard length as shown in the tables on pages 23, page 45 or 56, if possible.

Step 4. Determine belt width.

Belt Width Selection Tables on pages 26-28, pages 42-43 and page 54 show the load ratings for the stock widths of each of the stock belt pitches. Locate the critical sprocket in the drive system. It may be the small drive sprocket, or it may be one of the larger driveN sprockets with less than 6 teeth in mesh. Using the critical sprocket groove number and rpm as determined in Step 2, locate a torque or horsepower rating in the Belt Width Selection Tables of the proper belt pitch nearest to, but greater than, the peak design load from Step 1 based upon the critical sprocket. Evaluate each individual driveN sprocket using the same procedure, but with the appropriate design load and speed. The critical

sprocket will yield the greatest belt width. The greatest belt width resulting from this process should be selected for the application.

NOTE: The torque or horsepower ratings are based on 6 or more teeth in mesh for the smaller sprocket. Calculate the teeth in mesh for the selected drive design using the Teeth In Mesh Formula on Page 104. If the teeth in mesh is less than 6, the drive must be de-rated as indicated, which may require redesign for additional drive capacity.

Torque or horsepower ratings for various belt widths can be calculated by multiplying the table rating by the appropriate belt width multiplier.

When designing with PowerGrip GT2 or HTD, use the belt length from Step 3 to find the proper belt length factor in the Length Factor Tables included with each Belt Width Selection table. Multiply the torque rating selected above by the belt length factor to obtain the corrected rating. For all designs, the torque or horsepower rating must be equal to, or greater than, the peak design load of Step 1, or the design load of the critical sprocket.

Step 5. Determine proper belt installation tension.

Procedures to calculate proper belt installation tension for specific applications are included on Pages 65-66.

Step 6. Check and specify drive components.

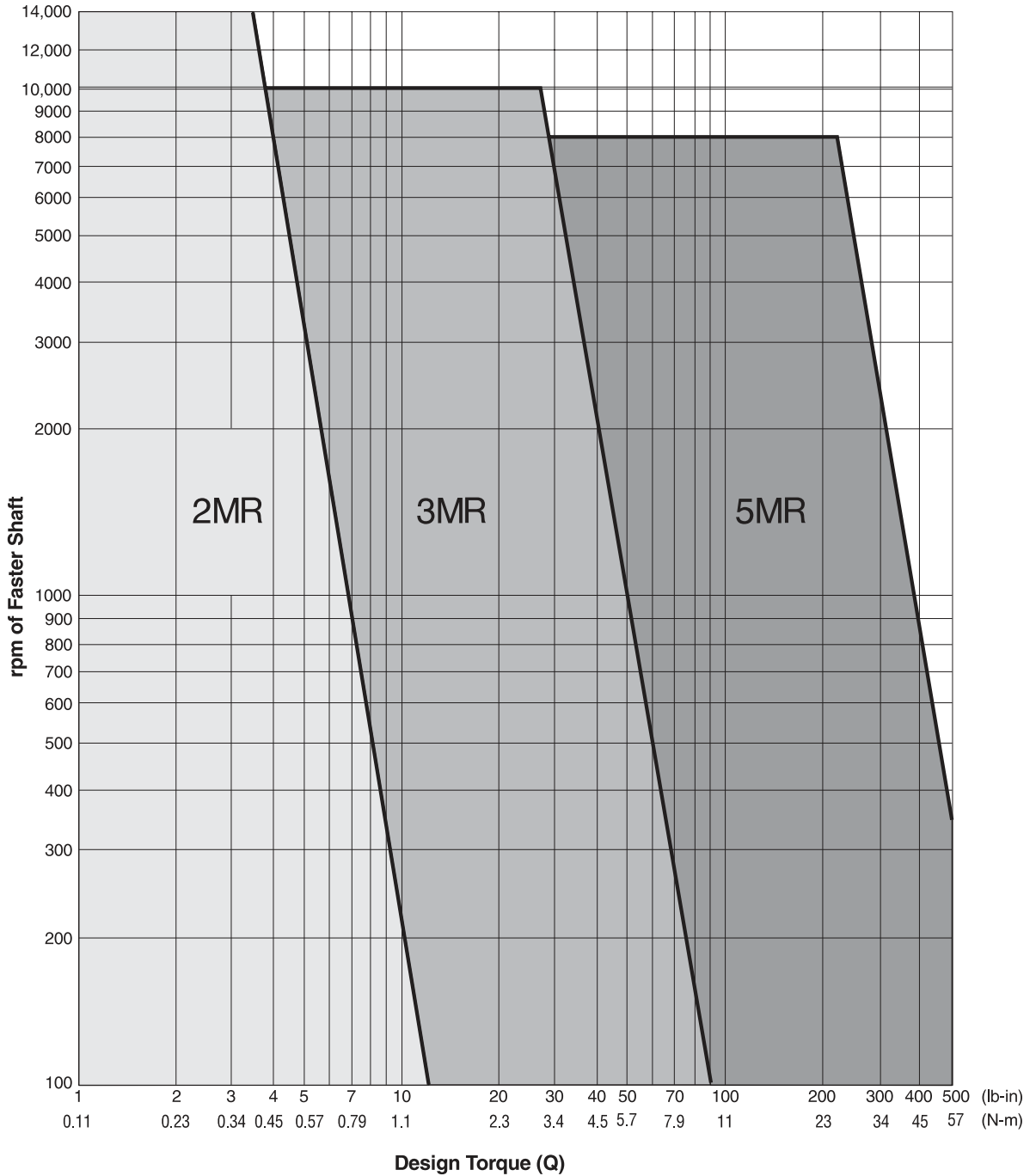
After the drive system components have been selected and checked against drive system requirements, contact Gates Product Application Engineering before going into production.





PowerGrip® GT®2 Belt Drives – Twin Power

Belt Pitch Selection Guide





PowerGrip® GT®2 Belt Drives – Twin Power

Belt Width Selection Tables – 3mm PowerGrip® GT®2 Belts

The following table represents the torque ratings for each belt in its base width at the predetermined number of grooves, pitch diameters and rpm's. These ratings must be multiplied by the appropriate width factor and applicable belt length factor to obtain the corrected torque rating. (See Step 4 of Drive Selection Procedure on Page 24.)

Belt Width (mm)	6	9	12	15
Width Multiplier	1.00	1.50	2.00	2.50

Rated Torque (lb-in) For Small Sprocket - 6mm Belt Width

Number of Grooves	16	18	20	22	24	28	30	34	38	45	50	56	62	74	80
	Pitch Diameter (mm)	15.28	17.19	19.10	21.01	22.92	24.83	28.65	32.47	36.29	42.97	47.75	53.48	59.21	70.66
Pitch Diameter (in)	0.602	0.677	0.752	0.827	0.902	0.977	1.128	1.278	1.429	1.692	1.88	2.105	2.331	2.782	3.008
10	14.02	16.27	18.50	20.70	22.89	25.06	29.38	33.61	37.82	45.04	50.13	56.15	62.13	73.87	79.67
20	12.82	14.92	17.00	19.05	21.09	23.11	27.13	31.06	34.97	41.67	46.38	51.95	57.48	68.32	73.68
40	11.62	13.57	15.50	17.40	19.29	21.16	24.88	28.51	32.12	38.29	42.63	47.75	52.83	62.77	67.68
60	10.91	12.78	14.62	16.44	18.24	20.02	23.56	27.02	30.45	36.32	40.44	45.30	50.11	59.53	64.17
100	10.03	11.78	13.51	15.22	16.91	18.59	21.90	25.14	28.35	33.83	37.67	42.20	46.68	55.44	59.74
200	8.83	10.43	12.01	13.57	15.11	16.64	19.65	22.59	25.50	30.45	33.92	38.00	42.03	49.89	53.74
300	8.12	9.64	11.14	12.61	14.06	15.50	18.34	21.10	23.83	28.48	31.73	35.54	39.31	46.64	50.23
400	7.63	9.08	10.51	11.92	13.32	14.69	17.40	20.04	22.65	27.08	30.17	33.80	37.38	44.33	47.73
500	7.24	8.65	10.03	11.39	12.74	14.06	16.68	19.22	21.73	25.99	28.96	32.45	35.88	42.54	45.79
600	6.92	8.29	9.64	10.96	12.26	13.55	16.09	18.55	20.98	25.10	27.97	31.34	34.65	41.07	44.21
800	6.43	7.73	9.01	10.27	11.52	12.74	15.15	17.49	19.79	23.70	26.41	29.59	32.71	38.75	41.69
1000	6.04	7.30	8.53	9.74	10.94	12.11	14.43	16.67	18.87	22.60	25.20	28.23	31.20	36.94	39.73
1200	5.72	6.94	8.14	9.31	10.46	11.60	13.83	15.99	18.12	21.71	24.20	27.11	29.96	35.45	38.12
1400	5.46	6.64	7.80	8.94	10.06	11.16	13.33	15.42	17.48	20.95	23.36	26.16	28.91	34.19	36.74
1600	5.22	6.38	7.51	8.62	9.71	10.78	12.89	14.93	16.93	20.29	22.62	25.34	27.99	33.08	35.54
1800	5.02	6.15	7.26	8.34	9.40	10.45	12.51	14.49	16.44	19.71	21.97	24.60	27.17	32.09	34.46
2000	4.84	5.94	7.03	8.09	9.13	10.15	12.16	14.10	16.00	19.19	21.39	23.94	26.44	31.20	33.49
2400	4.52	5.59	6.63	7.65	8.65	9.64	11.56	13.42	15.23	18.27	20.37	22.79	25.15	29.63	31.77
2800	4.25	5.28	6.29	7.28	8.25	9.20	11.05	12.84	14.58	17.49	19.49	21.80	24.04	28.26	30.27
3200	4.02	5.02	6.00	6.96	7.90	8.81	10.61	12.33	14.01	16.81	18.72	20.93	23.05	27.04	28.92
3600	3.81	4.79	5.74	6.67	7.58	8.48	10.22	11.88	13.50	16.20	18.03	20.14	22.16	25.92	27.68
4000	3.63	4.58	5.51	6.42	7.30	8.17	9.86	11.48	13.04	15.64	17.40	19.41	21.34	24.89	26.52
5000	3.24	4.14	5.02	5.87	6.71	7.52	9.10	10.60	12.05	14.42	16.02	17.81	19.50	22.52	23.86
6000	2.91	3.77	4.61	5.42	6.21	6.98	8.46	9.86	11.20	13.38	14.81	16.40	17.87	20.36	21.39
8000	2.40	3.19	3.95	4.69	5.40	6.09	7.41	8.63	9.77	11.57	12.70	13.89	14.88	16.27	16.64
10000	1.99	2.72	3.42	4.10	4.74	5.36	6.53	7.59	8.55	9.97	10.79	11.54	12.03		
12000	1.64	2.32	2.97	3.59	4.17	4.73	5.75	6.64	7.41	8.45	8.93				
14000	1.34	1.98	2.57	3.13	3.66	4.15	5.03	5.75	6.33						

Rated Torque (N-m)

10	1.58	1.84	2.09	2.34	2.59	2.83	3.32	3.80	4.27	5.09	5.66	6.34	7.02	8.35	9.00
20	1.45	1.69	1.92	2.15	2.38	2.61	3.06	3.51	3.95	4.71	5.24	5.87	6.49	7.72	8.32
40	1.31	1.53	1.75	1.97	2.18	2.39	2.81	3.22	3.63	4.33	4.82	5.40	5.97	7.09	7.65
60	1.23	1.44	1.65	1.86	2.06	2.26	2.66	3.05	3.44	4.10	4.57	5.12	5.66	6.73	7.25
100	1.13	1.33	1.53	1.72	1.91	2.10	2.47	2.84	3.20	3.82	4.26	4.77	5.27	6.26	6.75
200	1.00	1.18	1.36	1.53	1.71	1.88	2.22	2.55	2.88	3.44	3.83	4.29	4.75	5.64	6.07
300	0.92	1.09	1.26	1.42	1.59	1.75	2.07	2.38	2.69	3.22	3.58	4.02	4.44	5.27	5.68
400	0.86	1.03	1.19	1.35	1.50	1.66	1.97	2.26	2.56	3.06	3.41	3.82	4.22	5.01	5.39
500	0.82	0.98	1.13	1.29	1.44	1.59	1.88	2.17	2.45	2.94	3.27	3.67	4.05	4.81	5.17
600	0.78	0.94	1.09	1.24	1.39	1.53	1.82	2.10	2.37	2.84	3.16	3.54	3.92	4.64	4.99
800	0.73	0.87	1.02	1.16	1.30	1.44	1.71	1.98	2.24	2.68	2.98	3.34	3.70	4.38	4.71
1000	0.68	0.82	0.96	1.10	1.24	1.37	1.63	1.88	2.13	2.55	2.85	3.19	3.53	4.17	4.49
1200	0.65	0.78	0.92	1.05	1.18	1.31	1.56	1.81	2.05	2.45	2.73	3.06	3.39	4.01	4.31
1400	0.62	0.75	0.88	1.01	1.14	1.26	1.51	1.74	1.97	2.37	2.64	2.96	3.27	3.86	4.15
1600	0.59	0.72	0.85	0.97	1.10	1.22	1.46	1.69	1.91	2.29	2.56	2.86	3.16	3.74	4.02
1800	0.57	0.69	0.82	0.94	1.06	1.18	1.41	1.64	1.86	2.23	2.48	2.78	3.07	3.63	3.89
2000	0.55	0.67	0.79	0.91	1.03	1.15	1.37	1.59	1.81	2.17	2.42	2.71	2.99	3.53	3.78
2400	0.51	0.63	0.75	0.86	0.98	1.09	1.31	1.52	1.72	2.06	2.30	2.58	2.84	3.35	3.59
2800	0.48	0.60	0.71	0.82	0.93	1.04	1.25	1.45	1.65	1.98	2.20	2.46	2.72	3.19	3.42
3200	0.45	0.57	0.68	0.79	0.89	1.00	1.20	1.39	1.58	1.90	2.12	2.36	2.60	3.06	3.27
3600	0.43	0.54	0.65	0.75	0.86	0.96	1.15	1.34	1.53	1.83	2.04	2.28	2.50	2.93	3.13
4000	0.41	0.52	0.62	0.73	0.83	0.92	1.11	1.30	1.47	1.77	1.97	2.19	2.41	2.81	3.00
5000	0.37	0.47	0.57	0.66	0.76	0.85	1.03	1.20	1.36	1.63	1.81	2.01	2.20	2.55	2.70
6000	0.33	0.43	0.52	0.61	0.70	0.79	0.96	1.11	1.27	1.51	1.67	1.85	2.02	2.30	2.42
8000	0.27	0.36	0.45	0.53	0.61	0.69	0.84	0.97	1.10	1.31	1.44	1.57	1.68	1.84	1.88
10000	0.22	0.31	0.39	0.46	0.54	0.61	0.74	0.86	0.97	1.13	1.22	1.30	1.36		
12000	0.19	0.26	0.34	0.41	0.47	0.53	0.65	0.75	0.84	0.95	1.01				
14000	0.15	0.22	0.29	0.35	0.41	0.47	0.57	0.65	0.72						

Length Correction Factor		0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	
For Belt Length	From	Length (mm)	120	129	153	180	213	252	294	348	408	480	567	666	786	924	1092
		# of teeth	40	43	51	60	71	84	98	116	136	160	189	222	262	308	364
	To	Length (mm)	126	150	177	210	249	291	345	405	477	564	663	783	921	1089	1200
		# of teeth	42	50	59	70	83	97	115	135	159	188	221	261	307	363	400

Shaded area indicates drive conditions where reduced service life can be expected. Contact Gates Product Application Engineering for specific recommendations.





PowerGrip® GT®2 Belt Drives – Twin Power

Belt Width Selection Tables – 5mm PowerGrip® GT®2 Belts

The following table represents the torque ratings for each belt in its base width at the predetermined number of grooves, pitch diameters and rpm's. These ratings must be multiplied by the appropriate width factor and applicable belt length factor to obtain the corrected torque rating. (See Step 4 of Drive Selection Procedure on Page 24.)

Belt Width (mm)	9	15	20	25
Width Multiplier	0.60	1.00	1.33	1.67

Rated Torque (lb-in) For Small Sprocket - 15mm Belt Width*

Number of Grooves	18	20	22	24	26	28	32	36	40	45	50	56	62	74	80
Pitch Diameter (in)	28.65	31.83	35.01	38.20	41.38	44.56	50.93	57.30	63.66	71.62	79.58	89.13	98.68	117.77	127.32
Pitch Diameter (mm)	1.128	1.253	1.379	1.504	1.629	1.754	2.005	2.256	2.506	2.820	3.133	3.509	3.885	4.637	5.013
10	78.24	93.61	109.00	124.20	139.30	154.3	184.3	214.10	243.6	280.3	316.6	359.9	403.0	488.3	530.6
20	72.38	87.11	101.80	116.40	130.90	145.2	173.9	202.40	230.6	265.6	300.4	341.7	382.8	464.2	504.6
40	66.53	80.60	94.69	108.60	122.40	136.1	163.5	190.70	217.6	251.0	284.1	323.5	362.7	440.2	478.5
60	63.11	76.80	90.51	104.00	117.50	130.8	157.5	183.90	209.9	242.4	274.6	312.9	350.9	426.1	463.3
100	58.80	72.01	85.23	98.27	111.20	124.1	149.8	175.20	200.4	231.7	262.6	299.5	336.0	408.3	444.1
200	52.94	65.51	78.08	90.46	102.80	115.0	139.4	163.50	187.4	217.0	246.3	281.2	315.8	384.2	418.1
300	49.52	61.70	73.89	85.90	97.83	109.7	133.0	156.70	179.7	208.4	236.8	270.6	304.0	370.1	402.8
400	47.09	59.00	70.92	82.65	94.31	105.9	129.0	151.80	174.3	202.3	230.0	263.0	295.6	360.0	391.8
500	45.20	56.91	68.61	80.14	91.59	103.0	125.6	148.00	170.1	197.6	224.7	257.0	289.0	352.1	383.3
600	43.66	55.19	66.73	78.08	89.36	100.6	122.9	144.90	166.7	193.7	220.4	252.2	283.6	345.6	376.2
800	41.22	52.49	63.74	74.83	85.83	96.76	118.5	140.00	161.2	187.6	213.5	244.4	275.0	335.2	364.9
1000	39.33	50.38	61.43	72.30	83.09	93.80	115.1	136.20	156.9	182.7	208.1	238.3	268.2	326.9	355.9
1200	37.78	48.66	59.53	70.22	80.83	91.37	112.3	133.00	153.4	178.7	203.7	233.3	262.5	320.0	348.2
1400	36.47	47.20	57.92	68.46	78.92	89.31	109.9	130.30	150.4	175.3	199.8	228.9	257.6	313.8	341.4
1600	35.33	45.93	56.51	66.93	77.25	87.50	107.9	128.00	147.8	172.3	196.4	225.0	253.2	308.3	335.3
1800	34.32	44.80	55.27	65.57	75.77	85.90	106.0	125.90	145.4	169.6	193.3	221.5	249.1	303.2	329.6
2000	33.41	43.79	54.16	64.34	74.44	84.46	104.3	124.00	143.2	167.1	190.5	218.2	245.4	298.4	324.2
2400	31.84	42.03	52.20	62.20	72.10	81.92	101.4	120.60	139.4	162.7	185.4	212.3	238.6	289.5	314.1
2800	30.49	40.53	50.53	60.36	70.09	79.73	98.84	117.60	136.0	158.7	180.9	206.9	232.3	281.0	304.4
3200	29.31	39.20	49.06	58.73	68.31	77.79	96.54	115.00	132.9	155.1	176.6	201.8	226.3	272.8	294.9
3600	28.26	38.02	47.74	57.27	66.70	76.02	94.45	112.50	130.1	151.7	172.6	197.0	220.5	264.7	285.3
4000	27.31	36.94	46.53	55.93	65.21	74.39	92.50	110.20	127.4	148.4	168.8	192.3	214.8	256.5	275.7
5000	25.23	34.58	43.88	52.96	61.91	70.74	88.07	104.90	121.1	140.7	159.4	180.6	200.4	235.4	
6000	23.45	32.55	41.56	50.35	58.98	67.46	84.01	99.93	115.1	133.2	150.1	168.7	185.5		
8000	20.43	29.03	37.50	45.69	53.67	61.43	76.33	90.27	103.1	117.8	130.5				
10000	17.77	25.88	33.79	41.35	48.63	55.06	68.66	80.34							
12000	15.29	22.88	30.19	37.07	43.57	49.67	60.63								
14000	12.88	19.91	26.56	32.69	38.34	43.46									

Rated Torque (N-m)*

10	8.84	10.58	12.32	14.03	15.74	17.44	20.83	24.19	27.52	30.84	35.77	40.67	45.54	55.17	59.95
20	8.18	9.84	11.51	13.15	14.78	16.41	19.65	22.87	26.05	29.22	33.94	38.61	43.26	52.45	57.01
40	7.52	9.11	10.70	12.27	13.83	15.38	18.48	21.55	24.58	27.60	32.10	36.55	40.98	49.73	54.07
60	7.13	8.68	10.23	11.75	13.27	14.78	17.79	20.77	23.72	26.66	31.03	35.35	39.65	48.14	52.35
100	6.64	8.14	9.63	11.10	12.57	14.02	16.92	19.80	22.64	25.47	29.67	33.83	37.97	46.14	50.18
200	5.98	7.40	8.82	10.22	11.61	12.99	15.75	18.48	21.17	23.85	27.83	31.78	35.69	43.42	47.24
300	5.59	6.97	8.38	9.71	11.05	12.39	15.06	17.70	20.31	22.90	26.76	30.57	34.35	41.82	45.51
400	5.32	6.67	8.01	9.34	10.66	11.96	14.57	17.15	19.70	22.23	25.99	29.71	33.40	40.68	44.27
500	5.11	6.43	7.75	9.05	10.35	11.63	14.19	16.72	19.22	21.71	25.40	29.04	32.66	39.79	43.31
600	4.93	6.24	7.54	8.82	10.10	11.36	13.88	16.37	18.83	21.28	24.91	28.49	32.05	39.05	42.51
800	4.66	5.93	7.20	8.45	9.70	10.93	13.39	15.82	18.21	20.60	24.13	27.62	31.07	37.88	41.23
1000	4.44	5.69	6.94	8.17	9.39	10.60	13.01	15.39	17.73	20.06	23.52	26.93	30.30	36.94	40.21
1200	4.27	5.50	6.73	7.93	9.13	10.32	12.69	15.03	17.33	19.62	23.01	26.36	29.66	36.15	39.34
1400	4.12	5.33	6.54	7.73	8.92	10.09	12.42	14.73	16.99	19.24	22.58	25.86	29.10	35.46	38.58
1600	3.99	5.19	6.39	7.56	8.73	9.89	12.19	14.46	16.69	18.91	22.19	25.42	28.61	34.84	37.89
1800	3.88	5.06	6.24	7.41	8.56	9.71	11.98	14.22	16.43	18.61	21.85	25.02	28.15	34.26	37.24
2000	3.78	4.95	6.12	7.27	8.41	9.54	11.79	14.01	16.18	18.34	21.53	24.65	27.73	33.72	36.63
2400	3.60	4.75	5.90	7.03	8.15	9.26	11.46	13.62	15.75	17.85	20.95	23.98	26.96	32.71	35.49
2800	3.45	4.58	5.71	6.82	7.92	9.01	11.17	13.29	15.37	17.42	20.44	23.38	26.25	31.76	34.39
3200	3.31	4.43	5.54	6.64	7.72	8.79	10.91	12.99	15.02	17.02	19.96	22.80	25.57	30.83	33.32
3600	3.19	4.30	5.39	6.47	7.54	8.59	10.67	12.71	14.70	16.65	19.51	22.26	24.91	29.91	32.24
4000	3.09	4.17	5.26	6.32	7.37	8.41	10.45	12.45	14.40	16.30	19.07	21.72	24.27	28.99	31.15
5000	2.85	3.91	4.96	5.98	7.00	7.99	9.95	11.85	13.68	15.46	18.01	20.41	22.64	26.60	
6000	2.65	3.68	4.70	5.69	6.66	7.62	9.49	11.29	13.01	14.65	16.96	19.06	20.96		
8000	2.31	3.28	4.24	5.16	6.06	6.94	8.62	10.20	11.65	12.99	14.75				
10000	2.01	2.92	3.82	4.67	5.49	6.28	7.76	9.08							
12000	1.73	2.59	3.41	4.19	4.92	5.61	6.85								
14000	1.45	2.25	3.00	3.69	4.33	4.91									

Length Correction Factor		0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	
For Belt Length	From	Length (mm)	200	215	260	315	375	450	540	650	780	935	1130	1355	1625	1960
		# of teeth	40	43	52	63	75	90	108	130	156	187	226	271	325	392
	To	Length (mm)	210	255	310	370	445	535	645	775	930	1125	1350	1620	1955	2000
		# of teeth	42	51	62	74	89	107	129	155	186	225	270	324	391	400

Shaded area indicates drive conditions where reduced service life can be expected. Contact Gates Product Application Engineering for specific recommendations.

*See page 28 for hp or kw ratings.





PowerGrip® GT®2 Belt Drives – Twin Power

Belt Width Selection Tables – 5mm PowerGrip® GT®2 Belts

The following table represents the torque ratings for each belt in its base width at the predetermined number of grooves, pitch diameters and rpm. These ratings must be multiplied by the appropriate width factor and applicable belt length factor to obtain the corrected torque rating. (See Step 4 of Drive Selection Procedure on Page 24).

Belt Width (mm)	9	15	20	25
Width Multiplier	0.60	1.00	1.33	1.67

Rated Horsepower For Small Sprocket - 15mm Belt Width*

Number of Grooves	18	20	22	24	26	28	32	36	40	45	48	50	62	74	80
Pitch Diameter (mm)	28.65	31.83	35.01	38.20	41.38	44.56	50.93	57.30	63.66	71.62	76.39	79.58	98.68	117.77	127.32
Diameter (in)	1.128	1.253	1.379	1.504	1.629	1.754	2.005	2.256	2.506	2.820	3.008	3.133	3.885	4.637	5.013
10	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.08	0.08
20	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.12	0.15	0.16
40	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.14	0.16	0.17	0.18	0.23	0.28	0.30
60	0.06	0.07	0.09	0.10	0.11	0.12	0.15	0.18	0.20	0.23	0.25	0.26	0.33	0.41	0.44
100	0.09	0.11	0.14	0.16	0.18	0.20	0.24	0.28	0.32	0.37	0.40	0.42	0.53	0.65	0.70
200	0.17	0.21	0.25	0.29	0.33	0.36	0.44	0.52	0.59	0.69	0.74	0.78	1.00	1.22	1.33
300	0.24	0.29	0.35	0.41	0.47	0.52	0.63	0.75	0.86	0.99	1.07	1.13	1.45	1.76	1.92
400	0.30	0.37	0.45	0.52	0.60	0.67	0.82	0.96	1.11	1.28	1.39	1.46	1.88	2.28	2.49
500	0.36	0.45	0.54	0.64	0.73	0.82	1.00	1.17	1.35	1.57	1.70	1.78	2.29	2.79	3.04
600	0.42	0.53	0.64	0.74	0.85	0.96	1.17	1.38	1.59	1.84	2.00	2.10	2.70	3.29	3.58
800	0.52	0.67	0.81	0.95	1.09	1.23	1.50	1.78	2.05	2.38	2.58	2.71	3.49	4.26	4.63
1000	0.62	0.80	0.97	1.15	1.32	1.49	1.83	2.16	2.49	2.90	3.14	3.30	4.26	5.19	5.65
1200	0.72	0.93	1.13	1.34	1.54	1.74	2.14	2.53	2.92	3.40	3.69	3.88	5.00	6.09	6.63
1400	0.81	1.05	1.29	1.52	1.75	1.98	2.44	2.90	3.34	3.89	4.22	4.44	5.72	6.97	7.58
1600	0.90	1.17	1.43	1.70	1.96	2.22	2.74	3.25	3.75	4.37	4.74	4.99	6.43	7.83	8.51
1800	0.98	1.28	1.58	1.87	2.16	2.45	3.03	3.59	4.15	4.84	5.25	5.52	7.12	8.66	9.41
2000	1.06	1.39	1.72	2.04	2.36	2.68	3.31	3.93	4.55	5.30	5.75	6.05	7.79	9.47	10.29
2400	1.21	1.60	1.99	2.37	2.75	3.12	3.86	4.59	5.31	6.19	6.72	7.06	9.08	11.00	11.96
2800	1.35	1.80	2.24	2.68	3.11	3.54	4.39	5.23	6.04	7.05	7.64	8.04	10.30	12.50	13.52
3200	1.49	1.99	2.49	2.98	3.47	3.95	4.90	5.84	6.75	7.87	8.53	8.97	11.50	13.90	14.97
3600	1.61	2.17	2.73	3.27	3.81	4.34	5.40	6.43	7.43	8.66	9.39	9.86	12.60	15.10	16.30
4000	1.73	2.34	2.95	3.55	4.14	4.72	5.87	6.99	8.09	9.42	10.20	10.70	13.60	16.30	17.50
5000	2.00	2.74	3.48	4.20	4.91	5.61	6.99	8.32	9.61	11.2	12.06	12.60	15.90	18.70	
6000	2.23	3.10	3.96	4.79	5.62	6.42	8.00	9.51	10.96	12.7	13.66	14.30	17.70		
8000	2.59	3.69	4.76	5.80	6.81	7.80	9.69	11.46	13.09	14.9	15.95	16.60			
10000	2.82	4.11	5.36	6.56	7.72	8.82	10.89	12.75							
12000	2.91	4.36	5.75	7.06	8.30	9.46	11.54								
14000	2.86	4.42	5.90	7.26	8.52	9.65									

Rated Kilowatts*

10	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06
20	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.07	0.09	0.11	0.12
40	0.03	0.04	0.04	0.05	0.06	0.06	0.08	0.09	0.10	0.12	0.13	0.13	0.17	0.21	0.23
60	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.13	0.15	0.17	0.19	0.19	0.25	0.30	0.33
100	0.07	0.09	0.10	0.12	0.13	0.15	0.18	0.21	0.24	0.27	0.30	0.31	0.40	0.48	0.53
200	0.13	0.16	0.18	0.21	0.24	0.27	0.33	0.39	0.44	0.51	0.56	0.58	0.75	0.91	0.99
300	0.18	0.22	0.26	0.30	0.35	0.39	0.47	0.56	0.64	0.74	0.80	0.84	1.08	1.31	1.43
400	0.22	0.28	0.34	0.39	0.45	0.50	0.61	0.72	0.83	0.96	1.04	1.09	1.40	1.70	1.85
500	0.27	0.34	0.41	0.47	0.54	0.61	0.74	0.88	1.01	1.17	1.27	1.33	1.71	2.08	2.27
600	0.31	0.39	0.47	0.55	0.63	0.71	0.87	1.03	1.18	1.38	1.49	1.56	2.01	2.45	2.67
800	0.39	0.50	0.60	0.71	0.81	0.92	1.12	1.33	1.53	1.78	1.92	2.02	2.60	3.17	3.45
1000	0.47	0.60	0.73	0.86	0.98	1.11	1.36	1.61	1.86	2.16	2.34	2.46	3.17	3.87	4.21
1200	0.54	0.69	0.85	1.00	1.15	1.30	1.59	1.89	2.18	2.54	2.75	2.89	3.73	4.54	4.94
1400	0.60	0.78	0.96	1.13	1.31	1.48	1.82	2.16	2.49	2.90	3.15	3.31	4.27	5.20	5.66
1600	0.67	0.87	1.07	1.27	1.46	1.66	2.04	2.42	2.80	3.26	3.54	3.72	4.79	5.84	6.35
1800	0.73	0.95	1.18	1.40	1.61	1.83	2.26	2.68	3.10	3.61	3.92	4.12	5.31	6.46	7.02
2000	0.79	1.04	1.28	1.52	1.76	2.00	2.47	2.93	3.39	3.95	4.29	4.51	5.81	7.06	7.67
2400	0.90	1.19	1.48	1.77	2.05	2.33	2.88	3.42	3.96	4.62	5.01	5.27	6.77	8.22	8.92
2800	1.01	1.34	1.67	2.00	2.32	2.64	3.27	3.90	4.51	5.26	5.70	5.99	7.70	9.31	10.08
3200	1.11	1.48	1.86	2.22	2.59	2.95	3.66	4.35	5.03	5.87	6.36	6.69	8.57	10.30	11.16
3600	1.20	1.62	2.03	2.44	2.84	3.24	4.02	4.79	5.54	6.46	7.00	7.35	9.39	11.30	12.15
4000	1.29	1.75	2.20	2.65	3.09	3.52	4.38	5.22	6.03	7.02	7.61	7.99	10.20	12.10	13.05
5000	1.49	2.05	2.60	3.13	3.66	4.18	5.21	6.21	7.16	8.32	9.00	9.43	11.90	13.90	
6000	1.67	2.31	2.95	3.57	4.19	4.79	5.96	7.09	8.17	9.45	10.19	10.70	13.20		
8000	1.93	2.75	3.55	4.32	5.08	5.81	7.23	8.54	9.76	11.10	11.89	12.4			
10000	2.10	3.06	4.00	4.89	5.75	6.58	8.12	9.51							
12000	2.17	3.25	4.29	5.26	6.19	7.05	8.61								
14000	2.13	3.30	4.40	5.42	6.35	7.20									

Length Correction Factor		0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	
For Belt Length	From	Length (mm)	200	215	260	315	375	450	540	650	780	935	1130	1355	1625	1960
		# of teeth	40	43	52	63	75	90	108	130	156	187	226	271	325	392
	To	Length (mm)	210	255	310	370	445	535	645	775	930	1125	1350	1620	1955	2000
		# of teeth	42	51	62	74	89	107	129	155	186	225	270	324	391	400

Shaded area indicates drive conditions where reduced service life can be expected. Contact Gates Product Application Engineering for specific recommendations.

*See page 27 for torque ratings.

