

# POWERGRIP® GT® 3

## DRIVE DESIGN MANUAL

POWERGRIP® GT® 3  
ANTISTATIC  
TO I.S.O. 9563

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POWERING PROGRESS™

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\* Taper-Lock is a trademark of Reliance Electric

\* QD is a trademark of Emerson Electric



**WARNING! Be Safe!** Gates belt drive systems are very reliable when used safely and within Gates application recommendations. However, there are specific **USES THAT MUST BE AVOIDED** due to the risk of serious injury or death. These prohibited misuses include:

## **Primary In-Flight Aircraft Systems**

Do not use Gates belts, pulleys or sprockets on aircraft, propeller or rotor drive systems or in-flight accessory drives. Gates belt drive systems are not intended for aircraft use.

## **Lift Systems**

Do not use Gates belts, pulleys or sprockets in applications that depend solely upon the belt to raise/lower, support or sustain a mass without an independent safety backup system. For applications requiring special “Lift” or “Proof” type chains with minimum tensile strength or certified/test tensile strength requirements, be advised that because Gates belts have different drive design procedures from metal chains, the tensile strength of a belt when compared to the tensile strength of a chain should only be a part of the design process. Diligent analysis with the customer’s participation should be used when considering any such application.

## **Braking Systems**

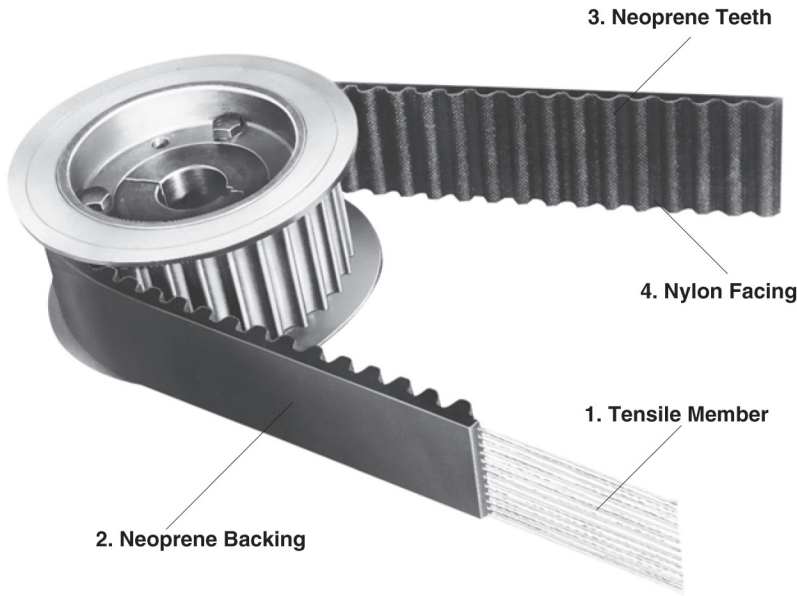
Do not use Gates belts, pulleys or sprockets in applications that depend solely upon the belt to slow or stop a mass, or to act as a brake without an independent safety backup system. Gates belt drive systems are not intended to function as a braking device in “emergency stop” systems.

### **DRIVE DESIGN SOFTWARE**

Drive design software can be found at [www.gates.com/drivedesign](http://www.gates.com/drivedesign).

This software assists designers in quickly selecting optimum drive solutions

## Belt Construction



PowerGrip® GT®3 drives provide positive, trouble-free power transmission and offer many advantages over conventional chain, gear and other belt drives.

### Advantages:

- Higher capacity
- Improved registration
- Reduced noise
- No lubrication required
- No stretching due to wear
- Corrosion resistance
- Excellent abrasion resistance
- Clean operation
- Long trouble-free service

## Construction Features

The tooth design substantially improves stress distribution and allows extra high loading. The molded teeth enter and leave the sprocket grooves smoothly with negligible friction—functioning in much the same way as teeth on a gear.

Construction consists of these components:

- 1. Fiberglass Tensile Member** — Provides high strength, excellent flex life and high resistance to elongation.
- 2. Neoprene® Backing** — Strong Neoprene bonded to the tensile member for protection against grime, oil and moisture. It also protects from frictional wear if idlers are used on the back of the belt.
- 3. Neoprene Teeth** — Shear-resistant Neoprene compound is molded integrally with the Neoprene backing. They are precisely formed and accurately spaced to assure smooth meshing with the sprocket grooves.
- 4. Nylon Facing** — Tough nylon fabric with a low coefficient of friction covers the wearing surfaces of the belt. It protects the tooth surfaces and provides a durable wearing surface for long service.

\* Neoprene is a trademark of Dupont

Selection of a stock PowerGrip® Belt Drive System involves these five steps:

1. Calculate design horsepower.
2. Select belt pitch
3. Select sprockets and belt.
4. Select belt width.
5. Determine bushing and bore requirements.

### Sample Problem

A gear pump is to be driven by a 40 hp normal torque electric motor with an output speed of 1160 rpm. The gear pump is to be driven at 580 rpm  $\pm$ 5%. The center distance is to be approximately 30 inches, but can be altered  $\pm$ 3 inches, if necessary. The motor shaft is 2 1/8 inches and the pump shaft is 3 inches. The pump will operate 16 hours a day, five days a week. The pump sprocket is limited to 18 inches OD. There are no unusual drive conditions. Design using PowerGrip GT®3.

### Step 1 Determine Design Horsepower Procedure

To calculate the design hp, first determine the relative severity or service factor of the drive. Average hours per day of service also should be considered. Locate the power source and the driveN unit in the Service Factors Table on Page 11. The design hp then is determined by multiplying the rated hp (usually the nameplate rating) by the service factor determined above.

#### Example

Using the Service Factor Chart, the driveR would be found in the first group. Since the pump will run 16 hours per day, follow the continuous service column down to the driveN machines group for gear pumps. This gives a 1.7 Service Factor. Since this is not a speedup drive, no additional service factor is required.

$$\text{Design HP} = 40 \times 1.7 = 68\text{DHP}$$

### Step 2 Select Belt Pitch Procedure

Using the design hp and the rpm of the faster shaft, select from the Belt Pitch Selection Guide graphs on Page 7.

#### Example

Locate 1160 rpm on the RPM of Faster Shaft scale and move over to where the Design Horsepower of 68 Dhp line intersects. The intersection falls at the 8mm and 14mm pitch overlap area. Both 8mm and 14mm pitches should be considered.

### Step 3 Select Sprockets and Belt Length Procedure

- a. Determine speed ratio.

The speed ratio can be determined by dividing the rpm of the faster shaft by the slower shaft rpm.

### Example

$$\frac{\text{rpm of faster shaft}}{\text{rpm of slower shaft}} = \frac{1160}{580} = 2.0$$

- b. Select sprocket combination and belt length. Turn to the Stock Drive Selection Tables (pages 12 through 45, 54 through 57 and 64 through 103) and in the proper pitch tables find the chosen speed ratio.

Moving over within the speed ratio block, find the stock sprocket combinations available for that speed ratio. Selection of the proper combination will depend on the center distance required, minimum or maximum required sprocket diameter and the recommended minimum sprocket diameter for electric motors (See table on Page 8).

After selecting possible sprocket combinations and center distances, record belt length (top of column) Length Factor (bottom of column), and the Teeth In Mesh Factor if applicable.

### Example

First, using the Stock Drive Selection Tables for 8mm pitch belts on pages 22 through 33, we locate the speed ratio of 2.0 to 1 on pages 30 and 31. There are 9 various sprocket combinations with a center distance within the required tolerance range. Of these, three are closest to the desired 30 inches. These are 72 to 144, 56 to 112 and 40 to 80. The minimum sprocket diameter of 6.1 inches for a 40 hp motor at 1160 rpm (See table on Page 8) eliminates the 56 to 112 and 40 to 80 sprocket combinations. Only the 8mm pitch, 72 to 144 sprocket combination will be considered further. On the line for the 72 to 144 sprocket combination, the center distance of 30.02 inches uses a 2400mm (94.49-inch), 8mm pitch belt. The belt length factor is 1.2.

Secondly, using the Stock Drive Selection Tables for 14mm pitch belts on pages 34 through 45, locate the speed ratio of 2.0 to 1 on page 42. Several combinations are shown which will meet the 30  $\pm$ 3-inch center distance requirement. The maximum OD limit of 18 inches on the driveN sprocket eliminates two of the combinations and the preference for as close to 30 inches center distance would favor the 36 to 72 and 28 to 56 combinations. However, the 4.912-inch diameter of the 28-groove sprocket is less than the recommended minimum diameter of 6.1 inches for the electric motor. So the 36 to 72 sprocket combination is chosen for further consideration.

For the 36 to 72, 14-mm pitch sprocket combination, the belt length used for the 30.42-inch center distance is a 2310mm (90.94-inch), 14mm pitch belt. The belt length factor is 1.0.

*continued*

## Procedure

### c. Check belt speed.

Do not exceed 6500 fpm with stock sprockets. Belt Speed is determined using the following formula:

$$V \text{ (fpm)} = \frac{PD \text{ (inches)} \times \text{Speed (rpm)}}{3.82}$$

### Example

Determining belt speed for each of the drive systems shows that the belt speed does not exceed 6500 fpm and can be considered further.

8mm Drive:

$$V = \frac{7.218 \times 1160}{3.82} = 2191.9 \text{ fpm}$$

14mm Drive:

$$V = \frac{6.316 \times 1160}{3.82} = 1917.9 \text{ fpm}$$

## Step 4 Select Belt Width

### Procedure

Belt Width Selection Tables (pages 46 through 53, 58 through 60 and pages 105 through 114) show the horsepower ranges of stock belt widths. The left-hand column shows the speed of the smaller sprocket. Across the top are various stock sprockets. The base rated horsepower capacity of a given sprocket at a specific rpm is at the point of intersection of the rpm row and sprocket column.

This base horsepower rating must be corrected for the belt length selected and for the number of teeth in mesh (if less than six). Multiply the base table rating by the applicable Length Factor and Teeth In Mesh Factor (if applicable), both determined in Step 3b. The corrected horsepower rating must equal or exceed design hp.

Where there are several choices, drive limitations may control the selection. In addition, the following rules must be observed.

1. Larger sprockets mean less belt width.
2. Larger sprockets yield extra long service life.
3. Avoid drives where the belt width exceeds sprocket diameter.
4. Avoid drives where center distance is greater than eight times the diameter of the smaller sprocket. Refer to Section II-10 Drive Alignment on Page 182 for additional details.

### Example

Referring to the 8mm pitch Belt Width Selection tables on page 48, locate the 1160 rpm line in each table in turn. Proceeding across to the 72-groove sprocket column (Smaller sprocket groove number), note the base belt horsepower capacity in each table. The 50mm (1.97-inch) width belt has a base horsepower rating which, when multiplied by the length factor of 1.2, exceeds the design horsepower.

$$84 \text{ hp} \times 1.2 = 100.8 \text{ hp}$$

And, repeating the procedure for the 14mm pitch belt horsepower tables on pages 51 through 53, we find the 55mm (2.16-inch) width belt has an 84.9 base horsepower rating for a 36-groove sprocket. This, multiplied by the length factor of 1.0, gives a corrected horsepower rating of 84.9 which also exceeds the design horsepower.

Since there is now a choice between the 8mm pitch, 72 to 144 ratio drive components, and the 14mm pitch, 36 to 72 ratio drive components, the rules as given in the procedure column must be considered. Rules 1 and 2 would dictate larger sprockets. Width is unaffected. Rules 3 and 4 would not apply, so the 8mm pitch drive system is the choice.

## Step 5 Check and Specify Stock Drive Components Procedure

a. Check the sprockets selected in steps 3 and 4 against the design requirements using the dimensions given in the Sprocket Specification Tables on pages 131 through 146. Use flange diameter in checking against maximum diameter requirements.

### Example

From the table on Page 140, we find the P144-8MGT-50 driveN sprocket has an overall diameter of 14.383 inches which is less than the 18-inch maximum specified.

### Procedure

b. Determine the type of bushing and check bore sizes by using the Sprocket Specification Tables; find the bushings to be used with the required sprockets. From the Stock Bushing Tables on pages 156 through 159, check the bore range and keyway dimensions against the design requirements.

### Example

Also from the sprocket data on Page 140 we note that the P72-8MGT-50 sprocket takes a 2517 bushing and the P144-8MGT-50 sprocket takes a 3020 bushing. On Page 156 in the bushing data table, a 2517 bushing has a bore range of 1/2 to 2 11/16 inches which includes the 2 1/8-inch bore required for the driveR shaft. The 3020 bushing has a bore range from 7/8 to 3 1/4 inches which meets the 3-inch bore required for the driveN shaft.

### Procedure

c. Specify stock drive components

### Example

They are as follows:

- 1—2400-8MGT-50 PowerGrip® GT®3 belt
- 1—P72-8MGT-50 driveR sprocket
- 1—2517 Bushing with a 2 1/8-inch bore
- 1—P144-8MGT-50 driveN sprocket
- 1—3020 Bushing with a 3-inch bore

# High Speed Drive Survey and Energy Savings Worksheet

## Customer Information

Company: \_\_\_\_\_ Distributor: \_\_\_\_\_  
Address: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

## Drive Information

I.D. of Drive (location, number, etc.) \_\_\_\_\_

Description of DriveN Equipment \_\_\_\_\_

Manufacturer of DriveN Equipment \_\_\_\_\_

Horsepower Rating of Motor \_\_\_\_\_ DriveN HP Load (Peak) \_\_\_\_\_ (Normal) \_\_\_\_\_

Motor Frame Size \_\_\_\_\_ Motor Shaft Dia. \_\_\_\_\_ DriveN Shaft Dia. \_\_\_\_\_

### Speed:

DriveR RPM \_\_\_\_\_ RPM Measured with Contact or Strobe Tachometer  Yes  No

DriveN RPM \_\_\_\_\_ RPM Measured with Contact or Strobe Tachometer  Yes  No

Speed Ratio \_\_\_\_\_ Speed Up \_\_\_\_\_ or Speed Down \_\_\_\_\_

Center Distance: Minimum \_\_\_\_\_ Nominal \_\_\_\_\_ Maximum \_\_\_\_\_

Existing Drive Components: DriveR \_\_\_\_\_ DriveN \_\_\_\_\_

Belts \_\_\_\_\_ Belt Manufacturer \_\_\_\_\_

### Ambient Conditions:

Temperature \_\_\_\_\_ Moisture \_\_\_\_\_ Oil, etc. \_\_\_\_\_

Abrasives \_\_\_\_\_ Shock Load \_\_\_\_\_

Static Conductivity Required?  Yes  No

### Maximum Sprocket Diameter (OD) and Width Limitations (for guard clearance):

DriveR: Max. OD \_\_\_\_\_ Max. Width \_\_\_\_\_ DriveN: Max. OD \_\_\_\_\_ Max. Width \_\_\_\_\_

Guard Description \_\_\_\_\_

### Motor Mount:

Double Screw Base?  Yes  No Motor Mounted on Sheet Metal?  Yes  No

Adequate Structure?  Yes  No Floating/Pivot Motor Base?  Yes  No

### Start Up Load:

%Motor Rating at Start Up \_\_\_\_\_ AC Inverter?  Yes  No Soft Start?  Yes  No

### Duty Cycle:

Number of Starts/Stops \_\_\_\_\_ times per \_\_\_\_\_ (hour, day, week, etc.)

## Energy Savings Information

Energy Cost per KW-Hour \_\_\_\_\_

Hours of Operation: Hours per Day \_\_\_\_\_ Days per Week \_\_\_\_\_ Weeks per Year \_\_\_\_\_



## Customer Information

**Company:** \_\_\_\_\_ **Distributor:** \_\_\_\_\_  
**Address:** \_\_\_\_\_ **Phone:** \_\_\_\_\_ **Fax:** \_\_\_\_\_  
 \_\_\_\_\_ **E-mail:** \_\_\_\_\_

## Application Summary

**General Description:** \_\_\_\_\_  
**Product Type:** \_\_\_\_\_ **Production Volume:** \_\_\_\_\_

## Design Parameters

**DriveR:**  
**Motor Type & Description:** \_\_\_\_\_ (Servo, Stepper, DC, AC, etc.) **Reversing:** \_\_\_\_\_ (Y/N)  
**Nominal Motor Torque / Power Output:** \_\_\_\_\_ **rpm:** \_\_\_\_\_  
**Max / Peak Motor Torque/Power Output:** \_\_\_\_\_ **rpm:** \_\_\_\_\_  
**Motor Stall Torque (If applicable):** \_\_\_\_\_ **Driver Rotation:** \_\_\_\_\_ (CW / CCW / Rev)

**DriveN's / Idlers:** \_\_\_\_\_ (Specify appropriate units for each field; in, mm / hp, kw / lb-ft, lb-in, N-m, etc.)

Description	X	Y	Pulley Diameter	Pitch	Sprocket Grooves	Inside/ Outside	rpm	Load (driven)	Units	Conditions		Shaft Diameter
										#	% Time	
Driver												

Note: For complex drive layouts use additional pages as needed

**Drive Sketch**

**Idler Details**

	<b>Min Position</b>	<b>Max Position</b>
Slot Movement:	X    Y	X    Y
Spring: <input style="width: 40px;" type="text"/>		
Pivoting Movement:	<b>Pivot Point</b>	<b>Movement Angle</b>
	X    Y	<b>Min Deg    Max Deg</b>
Spring: <input style="width: 40px;" type="text"/>		
Pivot Arm Radius: _____ (in/mm): _____		

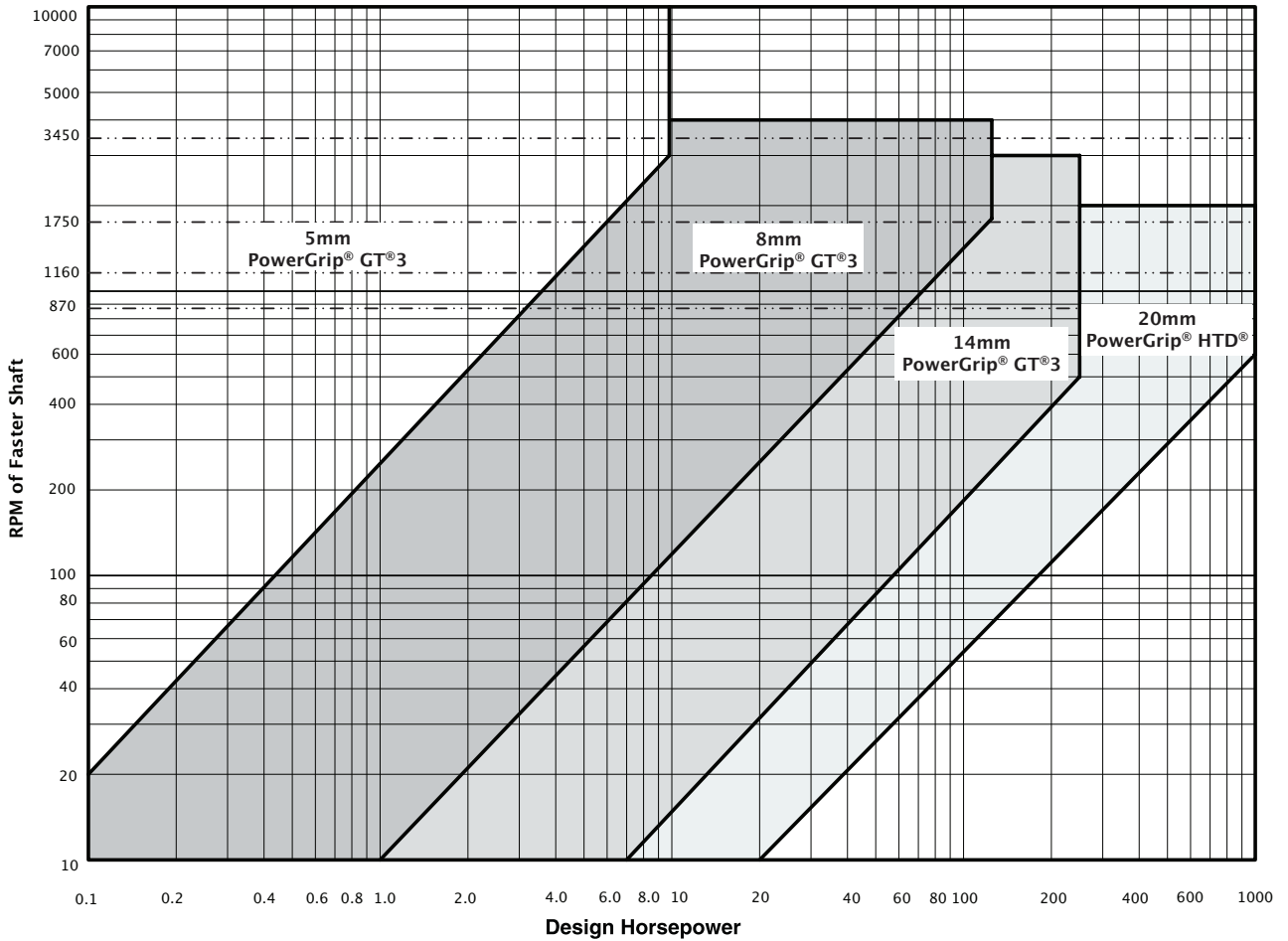
## Special Requirements

**Product Design Life:** \_\_\_\_\_ **Belt Life:** \_\_\_\_\_ **Hours/Day:** \_\_\_\_\_ **Hours/Year:** \_\_\_\_\_  
**Ambient Conditions:**  
 Temperature: \_\_\_\_\_ Moisture: \_\_\_\_\_ Oil: \_\_\_\_\_ Static Dissipation: \_\_\_\_\_ Abrasives: \_\_\_\_\_  
**Special Requirements:** \_\_\_\_\_  
 \_\_\_\_\_

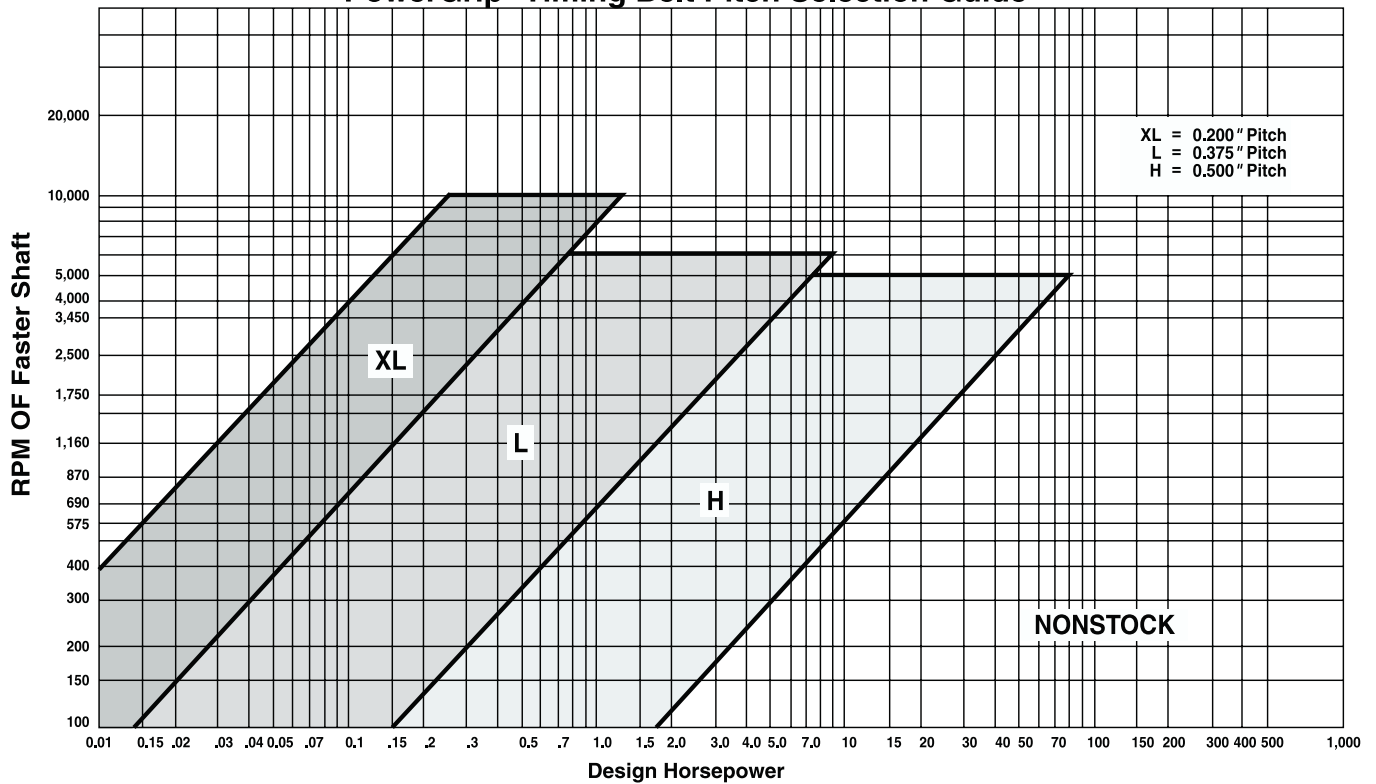
*Note: This worksheet may be used to survey multipoint drives. For more information on specifying shaft locations in multipoint drive layouts, see Engineering Section I-13 on page 174*



PowerGrip® GT<sup>3</sup> /20mm HTD® Belt Pitch Selection Guide



PowerGrip® Timing Belt Pitch Selection Guide



### Minimum Recommended Sprocket Outside Diameters for General Purpose Electric Motors—Synchronous Belts

Motor Horsepower	Motor RPM (60 Cycle and 50 Cycle Electric Motors)					
	575 485*	690 575*	870 725*	1160 950*	1750 1425*	3450 2850*
1/2	—	—	2.0	—	—	—
3/4	—	—	2.2	2.0	—	—
1	2.7	2.3	2.2	2.2	2.0	—
1 1/2	2.7	2.7	2.2	2.2	2.2	2.0
2	3.4	2.7	2.7	2.2	2.2	2.2
3	4.1	3.4	2.7	2.7	2.2	2.2
5	4.1	4.1	3.4	2.7	2.7	2.2
7 1/2	4.7	4.1	4.0	3.4	2.7	2.7
10	5.4	4.7	4.0	4.0	3.4	2.7
15	6.1	5.4	4.7	4.0	4.0	3.4
20	7.4	6.1	5.4	4.7	4.0	4.0
25	8.1	7.4	6.1	5.4	4.0	4.0
30	9.0	8.1	6.1	6.1	4.7	—
40	9.0	9.0	7.4	6.1	5.4	—
50	9.9	9.0	7.6	7.4	6.1	—
60	10.8	9.9	9.0	7.2	6.7	—
75	12.5	11.7	8.5	9.0	7.7	—
100	16.2	13.5	10.8	9.0	7.7	—
125	18.0	16.2	13.5	10.8	9.5#	—
150	19.8	18.0	16.2	11.7	9.5	—
200	19.8	19.8	19.8	—	11.9	—
250	19.8	19.8	—	—	—	—
300	24.3	24.3	—	—	—	—

\* These RPM are for 50 cycle electric motors.

# Use 8.6 for Frame Number 444 T only.

Data in the white area are from NEMA Standard MG-1-14-42, June, 1972, while data in the light blue area are from MG-1-14-43, January, 1968.

The dark blue area is a composite of electric motor manufacturers data. They are generally conservative, and specific motors and bearings may permit the use of a smaller motor sprocket. Consult the motor manufacturer. See Engineering Section II-13, Bearing/Shaft Load Calculations on Page 183.

**NOTE:** For a given motor horsepower and speed, the total belt pull is related to the motor sprocket size. As this size **decreases**, the total belt pull **increases**. Therefore, to limit the resultant load on motor shaft and bearings, NEMA lists minimum sprocket sizes for the various motors.

Gates 5mm, 8mm and 14mm pitch GT<sup>3</sup> and 20mm pitch HTD® belts have helically-wound fiberglass tension members embedded in a Neoprene®\* body with the belt teeth faced with a tough wear-resistant nylon fabric.

The three principal dimensions of a belt are

Pitch	Pitch Length	Width
-------	--------------	-------

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 PowerGrip® belt lies within the tensile member.

The part number designations for PowerGrip belts depend on the pitch of the belt. Belt designations are shown below for each of the available pitches.

### 5mm PowerGrip GT3

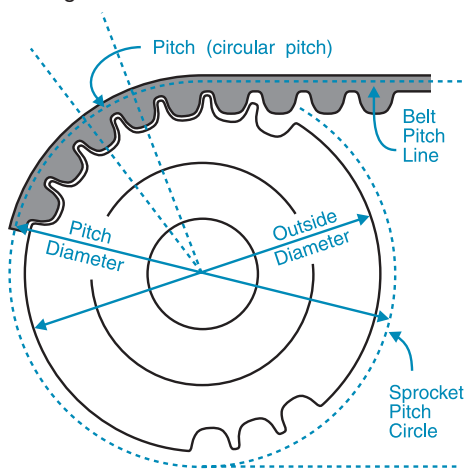
Example: 5mm pitch, 1600mm pitch length, 25mm belt width  
Belt Designation: 1600-5MGT-25

### 8mm, 14mm PowerGrip GT3

Example: 14mm pitch, 1610mm pitch length, 55mm belt width  
Belt Designation: 1610-14MGT-55

### 20mm PowerGrip HTD

Example: 20mm pitch, 2000mm pitch length, 230mm belt width  
Belt Designation: 2000-20M-230



The part number designations for PowerGrip GT3 and HTD sprockets depend on the pitch of belt. Sprocket designations are shown below for each of the available pitches.

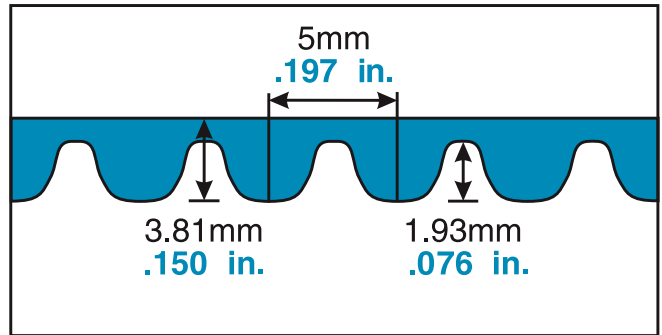
### 5mm, 8mm, 14mm PowerGrip GT3

Example: 14mm pitch, 48 grooves, 55mm belt width  
Sprocket Designation: P48-14MGT-55

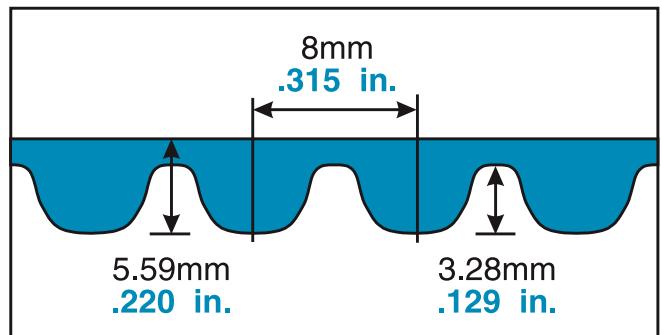
### 20mm PowerGrip HTD

Example: 20mm pitch, 52 grooves, 230mm belt width  
Sprocket Designation: P52-20M-230

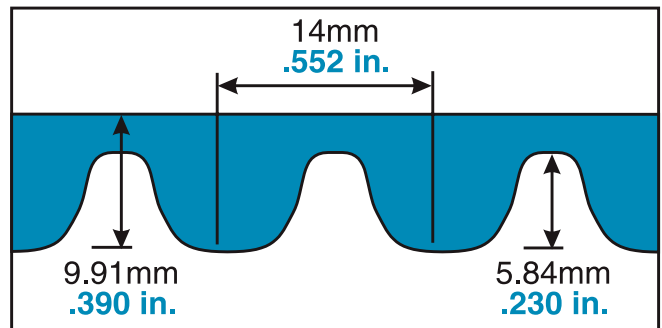
5mm Pitch - Reference Dimensions



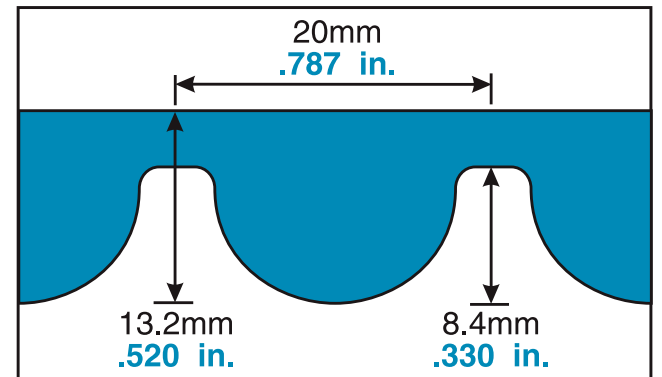
8mm Pitch - Reference Dimensions



14mm Pitch - Reference Dimensions



20mm Pitch - Reference Dimensions



\* Neoprene is a trademark of Dupont

# PowerGrip® GT®3 and HTD® Belt Drives

The following tables list the stock PowerGrip® belts and their dimensions.

## 5mm Pitch PowerGrip® GT®3 Stock Belt Lengths

Designation	Pitch Length		No. of Teeth
	(mm)	(in)	
300-5MGT	300	11.81	60
355-5MGT	355	13.98	71
375-5MGT	375	14.76	75
400-5MGT	400	15.75	80
405-5MGT	405	15.94	81
425-5MGT	425	16.73	85
450-5MGT	450	17.72	90
500-5MGT	500	19.69	100
535-5MGT	535	21.06	107
565-5MGT	565	22.24	113
575-5MGT	575	22.64	115
580-5MGT	580	22.83	116
600-5MGT	600	23.62	120
625-5MGT	625	24.61	125
650-5MGT	650	25.59	130
700-5MGT	700	27.56	140
750-5MGT	750	29.53	150
800-5MGT	800	31.50	160
815-5MGT	815	32.09	163
850-5MGT	850	33.46	170
900-5MGT	900	35.43	180
1000-5MGT	1000	39.37	200
1150-5MGT	1150	45.28	230
1300-5MGT	1300	51.18	260
1450-5MGT	1450	57.09	290
1600-5MGT	1600	62.99	320
1720-5MGT	1720	67.72	344
1755-5MGT	1755	69.09	351
2100-5MGT	2100	82.68	420

## 5MGT Stock Belt Widths

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

## 8mm Pitch PowerGrip® GT®3 Stock Belt Lengths

Designation	Pitch Length		No. of Teeth
	(mm)	(in)	
384-8MGT	384	15.12	48
480-8MGT	480	18.90	60
560-8MGT	560	22.05	70
576-8MGT	576	22.68	72
600-8MGT	600	23.62	75
640-8MGT	640	25.20	80
720-8MGT	720	28.35	90
800-8MGT	800	31.50	100
840-8MGT	840	33.07	105
880-8MGT	880	34.65	110
920-8MGT	920	36.22	115
960-8MGT	960	37.80	120
1040-8MGT	1040	40.94	130
1064-8MGT	1064	41.89	133
1104-8MGT	1104	43.46	138
1120-8MGT	1120	44.09	140
1160-8MGT	1164	45.67	145
1200-8MGT	1200	47.24	150
1224-8MGT	1224	48.19	153
1280-8MGT	1280	50.39	160
1440-8MGT	1440	56.69	180
1512-8MGT	1512	59.53	189
1584-8MGT	1584	62.36	198
1600-8MGT	1600	62.99	200
1760-8MGT	1760	69.29	220
1800-8MGT	1800	70.87	225
2000-8MGT	2000	78.74	250
2200-8MGT	2200	86.61	275
2400-8MGT	2400	94.49	300
2600-8MGT	2600	102.36	325
2800-8MGT	2800	110.24	350
3048-8MGT	3048	120.00	381
3280-8MGT	3280	129.13	410
3600-8MGT	3600	141.73	450
4400-8MGT	4400	173.23	550

## 8MGT Stock Belt Widths

Belt Width Code	Belt Width (mm)	Belt Width (in)
12	12	0.472
20	20	0.787
30	30	1.181
50	50	1.969
85	85	3.346

## 14mm Pitch PowerGrip® GT®3 Stock Belt Lengths

Designation	Pitch Length		No. of Teeth
	(mm)	(in)	
966-14MGT	966	38.03	69
1190-14MGT	1190	46.85	85
1400-14MGT	1400	55.12	100
1610-14MGT	1610	63.39	115
1778-14MGT	1778	70.00	127
1890-14MGT	1890	74.41	135
2100-14MGT	2100	82.68	150
2310-14MGT	2310	90.94	165
2450-14MGT	2450	96.46	175
2590-14MGT	2590	101.97	185
2800-14MGT	2800	110.24	200
3150-14MGT	3150	124.02	225
3360-14MGT	3360	132.28	240
3500-14MGT	3500	137.80	250
3850-14MGT	3850	151.57	275
4326-14MGT	4326	170.31	309
4578-14MGT	4578	180.24	327
4956-14MGT	4956	195.12	354
5320-14MGT	5320	209.45	380
5740-14MGT	5740	225.98	410
6160-14MGT	6160	242.52	440
6860-14MGT	6860	270.08	490

## 14MGT Stock Belt Widths

Belt Width Code	Belt Width (mm)	Belt Width (in)
40	40	1.575
55	55	2.165
85	85	3.346
115	115	4.528
170	170	6.693

## 20mm Pitch PowerGrip® HTD® Stock Belt Lengths

Designation	Pitch Length		No. of Teeth
	(mm)	(in)	
2000-20M	2000	78.74	100
2500-20M	2500	98.43	125
3400-20M	3400	133.86	170
3800-20M	3800	149.61	190
4200-20M	4200	165.35	210
4600-20M	4600	181.10	230
5000-20M	5000	196.85	250
5200-20M	5200	204.72	260
5400-20M	5400	212.60	270
5600-20M	5600	220.47	280
5800-20M	5800	228.35	290
6000-20M	6000	236.22	300
6200-20M	6200	244.09	310
6400-20M	6400	251.97	320
6600-20M	6600	259.84	330

## 20M Stock Belt Widths

Belt Width Code	Belt Width (mm)	Belt Width (in)
115	115	4.528
170	170	6.693
230	230	9.055
290	290	11.417
340	340	13.386

# Basic PowerGrip® Service Factors

DriveN Machine	DriveR					
	AC Motors: Normal Torque, Squirrel Cage, Synchronous, Split Phase, Inverter Controlled DC Motors: Shunt Wound Stepper Motors Engines: Multiple Cylinder Internal Combustion			AC Motors: High Torque, High Slip, Repulsion-Induction, Single Phase, Series Wound, Slip Ring DC Motors: Series Wound, Compound Wound Servo Motors Engines: Single Cylinder Internal Combustion Line Shafts Clutches		
	Intermittent Service (Up to 8 hours Daily or Seasonal)	Normal Service (8 - 16 hours Daily)	Continuous Service (16 - 24 hours Daily)	Intermittent Service (Up to 8 hours Daily or Seasonal)	Normal Service (8 - 16 hours Daily)	Continuous Service (16 - 24 hours Daily)
Display, Dispensing Equipment Instrumentation Measuring Equipment Medical Equipment Office, Projection Equipment	1.0	1.2	1.4	1.2	1.4	1.6
Appliances, Sweepers, Sewing Machines Screens, Oven Screens, Drum, Conical Woodworking Equipment (Light): Band Saws, Drills, Lathes	1.1	1.3	1.5	1.3	1.5	1.7
Agitators for Liquids Conveyors: Belt, Light Package Drill Press, Lathes, Saws Laundry Machinery Wood Working Equipment (Heavy): Circular Saws, Jointers, Planers	1.2	1.4	1.6	1.6	1.8	2.0
Agitators for Semi-Liquids Compressor: Centrifugal Conveyor Belt: Ore, Coal, Sand Dough Mixers Line Shafts Machine Tools: Grinder, Shaper, Boring Mill, Milling Machines Paper Machinery (except Pulpers): Presses, Punches, Shears Printing Machinery Pumps: Centrifugal, Gear Screens: Revolving, Vibratory	1.3	1.5	1.7	1.6	1.8	2.0
Brick Machinery (except Pug Mills) Conveyor: Apron, Pan, Bucket, Elevator Extractors, Washers Fans, Centrifugal Blowers Generators & Exciters Hoists Rubber Calender, Mills, Extruders	1.4	1.6	1.8	1.8	2.0	2.2
Centrifuges Screw Conveyors Hammer Mills Paper Pulpers Textile Machinery	1.5	1.7	1.9	1.9	2.1	2.3
Blowers: Positive Displacement, Mine Fans Pulverizers	1.6	1.8	2.0	2.0	2.2	2.4
Compressors: Reciprocating Crushers: Gyratory, Jaw, Roll Mills: Ball, Rod, Pebble, etc. Pumps: Reciprocating Saw Mill Equipment	1.7	1.9	2.1	2.1	2.3	2.5

These service factors are adequate for most belt drive applications. Note that service factors cannot be substituted for good engineering judgment. Service factors may be adjusted based upon an understanding of the severity of actual drive operating conditions.

## Additional Service Factors

### Speedup Drives

For speedup drives, add to the basic service factor the additional factor given below.

Speedup Ratio Range	Additional Factor	Speedup Ratio Range	Additional Factor
1 to 1.24	none	2.50 to 3.49	.30
1.25 to 1.74	.10	3.50 & over	.40
1.75 to 2.49	.20		

### Unusual Conditions

Additional service factors are required for unusual conditions such as load reversal, heavy shock, plugged motor stop, electric brake. Contact Gates Power Transmission Product Application for assistance.









		Center Distance, Inches																				Speed Ratio	Sprocket Combinations	
																							No. of Grooves	No. of Grooves
650-5MGT P.L. 25.590 130 Teeth	700-5MGT P.L. 27.550 140 Teeth	750-5MGT P.L. 29.528 150 Teeth	800-5MGT P.L. 31.496 160 Teeth	815-5MGT P.L. 32.087 163 Teeth	850-5MGT P.L. 33.465 170 Teeth	900-5MGT P.L. 35.433 180 Teeth	1000-5MGT P.L. 39.370 200 Teeth	1150-5MGT P.L. 45.276 230 Teeth	1300-5MGT P.L. 51.181 260 Teeth	1450-5MGT P.L. 57.087 290 Teeth	1600-5MGT P.L. 62.992 320 Teeth	1720-5MGT P.L. 67.716 344 Teeth	1755-5MGT P.L. 69.094 351 Teeth	2100-5MGT P.L. 82.877 420 Teeth										
9.15	10.14	11.12	12.11	12.40	13.09	14.07	16.04	19.00	21.95	24.90	27.85	30.22	30.90	37.70	1.176	34	40							
5.50	6.49	7.47	8.46	8.75	9.44	10.42	12.40	15.35	18.30	21.26	24.21	26.57	27.26	34.05	1.176	68	80							
10.43	11.42	12.40	13.39	13.68	14.37	15.35	17.32	20.28	23.23	26.18	29.13	31.50	32.18	38.98	1.182	22	26							
8.07	9.05	10.04	11.02	11.32	12.00	12.99	14.96	17.91	20.86	23.82	26.77	29.13	29.82	36.61	1.182	44	52							
8.71	9.69	10.68	11.66	11.96	12.64	13.63	15.60	18.55	21.50	24.46	27.41	29.77	30.46	37.25	1.184	38	45							
9.35	10.33	11.32	12.30	12.60	13.28	14.27	16.24	19.19	22.14	25.10	28.05	30.41	31.10	37.89	1.188	32	38							
10.53	11.52	12.50	13.49	13.78	14.47	15.45	17.42	20.38	23.33	26.28	29.23	31.60	32.28	39.08	1.190	21	25							
10.63	11.61	12.60	13.58	13.88	14.56	15.55	17.52	20.47	23.42	26.38	29.33	31.69	32.38	39.17	1.200	20	24							
10.09	11.07	12.06	13.04	13.34	14.02	15.01	16.98	19.93	22.88	25.84	28.79	31.15	31.84	38.63	1.200	25	30							
9.54	10.53	11.52	12.50	12.80	13.48	14.47	16.44	19.39	22.34	25.30	28.25	30.61	31.30	38.09	1.200	30	36							
8.46	9.45	10.43	11.42	11.71	12.40	13.38	15.35	18.31	21.26	24.21	27.16	29.53	30.21	37.01	1.200	40	48							
7.37	8.36	9.35	10.33	10.63	11.31	12.30	14.27	17.22	20.17	23.13	26.08	28.44	29.13	35.92	1.200	50	60							
6.29	7.27	8.26	9.25	9.54	10.23	11.21	13.18	16.14	19.09	22.05	25.00	27.36	28.05	34.84	1.200	60	72							
10.73	11.71	12.70	13.68	13.98	14.66	15.65	17.62	20.57	23.52	26.48	29.43	31.79	32.48	39.27	1.211	19	23							
9.74	10.73	11.71	12.70	12.99	13.68	14.66	16.63	19.59	22.54	25.49	28.44	30.81	31.49	38.29	1.214	28	34							
6.68	7.67	8.65	9.64	9.94	10.62	11.61	13.58	16.53	19.48	22.44	25.39	27.75	28.44	35.24	1.214	56	68							
10.28	11.27	12.25	13.24	13.53	14.22	15.20	17.17	20.13	23.08	26.04	28.99	31.35	32.04	38.83	1.217	23	28							
10.83	11.81	12.80	13.78	14.08	14.76	15.75	17.72	20.67	23.62	26.58	29.53	31.89	32.58	39.37	1.222	18	22							
8.85	9.84	10.82	11.81	12.11	12.79	13.78	15.75	18.70	21.65	24.61	27.56	29.92	30.61	37.40	1.222	36	44							
9.94	10.92	11.91	12.89	13.19	13.87	14.86	16.83	19.78	22.74	25.69	28.64	31.01	31.69	38.49	1.231	26	32							
7.08	8.06	9.05	10.03	10.33	11.02	12.00	13.97	16.93	19.88	22.83	25.78	28.15	28.83	35.63	1.231	52	64							
10.48	11.47	12.45	13.44	13.73	14.42	15.40	17.37	20.33	23.28	26.23	29.18	31.55	32.23	39.03	1.238	21	26							
7.82	8.80	9.79	10.77	11.07	11.75	12.74	14.71	17.67	20.62	23.57	26.52	28.89	29.57	36.37	1.244	45	56							
10.58	11.56	12.55	13.54	13.83	14.52	15.50	17.47	20.43	23.38	26.33	29.28	31.65	32.33	39.13	1.250	20	25							
10.14	11.12	12.11	13.09	13.39	14.07	15.06	17.03	19.98	22.93	25.89	28.84	31.20	31.89	38.68	1.250	24	30							
9.25	10.23	11.22	12.20	12.50	13.18	14.17	16.14	19.10	22.05	25.00	27.95	30.32	31.00	37.80	1.250	32	40							
8.80	9.79	10.77	11.76	12.06	12.74	13.73	15.70	18.65	21.60	24.56	27.51	29.87	30.56	37.35	1.250	36	45							
8.36	9.35	10.33	11.32	11.61	12.30	13.28	15.25	18.21	21.16	24.11	27.06	29.43	30.11	36.91	1.250	40	50							
7.47	8.46	9.44	10.43	10.72	11.41	12.39	14.36	17.32	20.27	23.23	26.18	28.54	29.23	36.02	1.250	48	60							
5.69	6.67	7.66	8.65	8.94	9.63	10.62	12.59	15.55	18.50	21.45	24.40	26.77	27.45	34.25	1.250	64	80							
10.68	11.66	12.65	13.63	13.93	14.61	15.60	17.57	20.52	23.47	26.43	29.38	31.74	32.43	39.22	1.263	19	24							
8.56	9.54	10.53	11.51	11.81	12.49	13.48	15.45	18.40	21.36	24.31	27.26	29.63	30.31	37.11	1.263	38	48							
9.45	10.43	11.42	12.40	12.70	13.38	14.37	16.34	19.29	22.24	25.20	28.15	30.51	31.20	37.99	1.267	30	38							
10.33	11.32	12.30	13.29	13.58	14.27	15.25	17.22	20.18	23.13	26.08	29.03	31.40	32.08	38.88	1.273	22	28							
7.86	8.85	9.84	10.82	11.12	11.80	12.79	14.76	17.71	20.67	23.62	26.57	28.94	29.62	36.42	1.273	44	56							
10.78	11.76	12.75	13.73	14.03	14.71	15.70	17.67	20.62	23.57	26.53	29.48	31.84	32.53	39.32	1.278	18	23							
9.99	10.97	11.96	12.94	13.24	13.92	14.91	16.88	19.83	22.78	25.74	28.69	31.05	31.74	38.53	1.280	25	32							
7.17	8.16	9.14	10.13	10.43	11.11	12.10	14.07	17.02	19.98	22.93	25.88	28.25	28.93	35.73	1.280	50	64							
9.64	10.63	11.61	12.60	12.89	13.58	14.56	16.53	19.49	22.44	25.39	28.34	30.71	31.39	38.19	1.286	28	36							
6.48	7.46	8.45	9.44	9.73	10.42	11.41	13.38	16.33	19.28	22.24	25.19	27.56	28.24	35.04	1.286	56	72							
8.95	9.94	10.92	11.91	12.20	12.89	13.87	15.84	18.80	21.75	24.70	27.65	30.02	30.71	37.50	1.294	34	44							
10.53	11.51	12.50	13.49	13.78	14.47	15.45	17.42	20.38	23.33	26.28	29.23	31.60	32.28	39.08	1.300	20	26							
8.26	9.25	10.23	11.22	11.51	12.20	13.18	15.15	18.11	21.06	24.02	26.97	29.33	30.02	36.81	1.300	40	52							
10.18	11.17	12.15	13.14	13.43	14.12	15.11	17.08	20.03	22.98	25.94	28.89	31.25	31.94	38.73	1.304	23	30							
9.84	10.82	11.81	12.80	13.09	13.78	14.76	16.73	19.69	22.64	25.59	28.54	30.91	31.59	38.39	1.308	26	34							
6.87	7.86	8.85	9.83	10.13	10.81	11.80	13.77	16.73	19.68	22.63	25.58	27.95	28.64	35.43	1.308	52	68							
10.63	11.61	12.60	13.58	13.88	14.56	15.55	17.52	20.47	23.42	26.38	29.33	31.69	32.38	39.17	1.316	19	25							
8.46	9.44	10.43	11.41	11.71	12.39	13.38	15.35	18.31	21.26	24.21	27.16	29.53	30.21	37.01	1.316	38	50							
8.90	9.89	10.87	11.86	12.15	12.84	13.82	15.79	18.75	21.70	24.65	27.61	29.97	30.66	37.45	1.324	34	45							
10.73	11.71	12.70	13.68	13.98	14.66	15.65	17.62	20.57	23.52	26.48	29.43	31.79	32.48	39.27	1.324	68	90							
10.38	11.37	12.35	13.34	13.63	14.32	15.30	17.27	20.23	23.18	26.13	29.08	31.45	32.13	38.93	1.333	18	24							
10.04	11.02	12.01	12.99	13.29	13.97	14.96	16.93	19.88	22.83	25.79	28.74	31.10	31.79	38.58	1.333	21	28							
9.35	10.33	11.32	12.30	12.60	13.28	14.27	16.24	19.19	22.14	25.10	28.05	30.41	31.10	37.89	1.333	30	40							
8.65	9.64	10.62	11.61	11.90	12.59	13.58	15.55	18.50	21.45	24.41	27.36	29.72	30.41	37.20	1.333	36	48							
7.61	8.60	9.59	10.57	10.87	11.55	12.54	14.51	17.47	20.42	23.37	26.32	28.69	29.37	36.17	1.333	45	60							
7.27	8.25	9.24	10.23	10.52	11.21	12.19	14.16	17.12	20.07	23.03	25.98	28.34	29.03	35.82	1.333	48	64							
5.87	6.86	7.85	8.84	9.13	9.82	10.81	12.78	15.74	18.69	21.65	24.60	26.96	27.65	34.44	1.333	60	80							
9.54	10.53	11.51	12.50	12.79	13.48	14.46	16.43	19.39	22.34	25.30	28.25	30.61	31.30	38.09	1.357	28	38							
9.89	10.87	11.86	12.84	13.14	13.82	14.81	16.78	19.74	22.69	25.64	28.59	30.96	31.64	38.44	1.360	25	34							
6.96	7.95	8.94	9.93	10.22	10.91	11.89	13.87	16.82	19.77	22.73	25.68	28.05	28.73	35.53	1.360	50	68							
10.23	11.22	12.20	13.19	13.48	14.17	15.15	17.12	20.08	23.03	25.98	28.93	31.30	31.98	38.78	1.364	22	30							
7.66	8.65	9.63	10.62	10.92	11.60	12.59	14.56	17.51	20.47	23.42	26.37	28.74	29.42	36.22	1.364	44	60							
10.58	11.56	12.55	13.53	13.83	14.51	15.50	17.47	20.42	23.37	26.33	29.28	31.64	32.33	39.12	1.368	19	26							
8.35	9.34	10.33	11.31	11.61	12.29	13.28	15.25	18.21	21.16	24.11	27.06	29.43	30.11	36.91	1.368	38	52							
9.05	10.03	11.02	12.00	12.30	12.98	13.97	15.94	18.90	21.85	24.80	27.75	30.12	30.80	37.60	1.375	32	44							
9.74	10.72	11.71	12.69	12.99	13.68	14.66	16.63	19.59	22.54	25.49	28.44	30.81												

Sprocket Combinations				Speed Ratio	Center Distance, Inches															
DriveR		DriveN			Center Distance, Inches															
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)		300-5MGT P.L. 11.811 60 Teeth	355-5MGT P.L. 13.976 71 Teeth	375-5MGT P.L. 14.764 75 Teeth	400-5MGT P.L. 15.748 80 Teeth	405-5MGT P.L. 15.945 81 Teeth	425-5MGT P.L. 16.732 85 Teeth	450-5MGT P.L. 17.716 90 Teeth	500-5MGT P.L. 19.685 100 Teeth	535-5MGT P.L. 21.063 107 Teeth	565-5MGT P.L. 22.244 113 Teeth	575-5MGT P.L. 22.638 115 Teeth	590-5MGT P.L. 22.835 116 Teeth	600-5MGT P.L. 23.622 120 Teeth	625-5MGT P.L. 24.606 125 Teeth		
22	1.379	32	2.005	1.455	3.23	4.32	4.71	5.21	5.30	5.70	6.19	7.18	7.87	8.46	8.66	8.75	9.15	9.64		
44	2.757	64	4.010	1.455								4.48	5.18	5.77	5.97	6.07	6.46	6.96		
26	1.629	38	2.381	1.462	2.73	3.82	4.21	4.71	4.81	5.20	5.70	6.68	7.37	7.96	8.16	8.26	8.65	9.15		
30	1.880	44	2.757	1.467					4.31	4.70	5.20	6.18	6.87	7.47	7.67	7.76	8.16	8.65		
34	2.130	50	3.133	1.471					3.80	4.20	4.70	5.68	6.38	6.97	7.17	7.26	7.66	8.16		
19	1.191	28	1.754	1.474	3.58	4.67	5.06	5.55	5.65	6.05	6.54	7.52	8.21	8.80	9.00	9.10	9.49	9.99		
38	2.381	56	3.509	1.474					3.30	3.70	4.20	5.18	5.88	6.47	6.67	6.77	7.16	7.66		
23	1.441	34	2.130	1.478	3.08	4.17	4.56	5.06	5.15	5.55	6.05	7.03	7.72	8.31	8.51	8.60	9.00	9.49		
20	1.253	30	1.880	1.500	3.43	4.52	4.91	5.41	5.50	5.90	6.39	7.37	8.06	8.65	8.85	8.95	9.34	9.84		
24	1.504	36	2.256	1.500	2.93	4.02	4.41	4.91	5.00	5.40	5.89	6.88	7.57	8.16	8.36	8.45	8.85	9.34		
30	1.880	45	2.820	1.500					4.25	4.65	5.15	6.13	6.82	7.41	7.61	7.71	8.11	8.60		
32	2.005	48	3.008	1.500					4.00	4.40	4.90	5.88	6.57	7.17	7.37	7.46	7.86	8.35		
40	2.506	60	3.760	1.500							3.89	4.88	5.57	6.17	6.37	6.46	6.86	7.36		
48	3.008	72	4.511	1.500									4.56	5.16	5.36	5.46	5.86	6.36		
60	3.760	90	5.639	1.500																
45	2.820	68	4.261	1.511									4.22	4.92	5.51	5.71	6.21	6.70		
25	1.566	38	2.381	1.520	2.78	3.87	4.26	4.76	4.85	5.25	5.75	6.73	7.42	8.01	8.21	8.31	8.70	9.20		
21	1.316	32	2.005	1.524	3.28	4.37	4.76	5.26	5.35	5.75	6.24	7.22	7.91	8.50	8.70	8.80	9.20	9.69		
34	2.130	52	3.258	1.529					3.70	4.09	4.59	5.58	6.27	6.87	7.07	7.16	7.56	8.05		
26	1.629	40	2.506	1.538	2.62	3.72	4.11	4.61	4.70	5.10	5.60	6.58	7.27	7.86	8.06	8.16	8.55	9.05		
52	3.258	80	5.013	1.538										4.54	4.74	4.84	5.24	5.74		
22	1.379	34	2.130	1.545	3.13	4.22	4.61	5.11	5.20	5.60	6.09	7.07	7.76	8.36	8.56	8.65	9.05	9.54		
44	2.757	68	4.261	1.545									4.26	4.96	5.56	5.76	6.16	6.65		
18	1.128	28	1.754	1.556	3.63	4.72	5.11	5.60	5.70	6.09	6.59	7.57	8.26	8.85	9.05	9.15	9.54	10.04		
36	2.256	56	3.509	1.556					3.29	3.38	3.79	4.29	5.27	5.97	6.56	6.76	6.86	7.26		
32	2.005	50	3.133	1.563					3.89	4.29	4.79	5.78	6.47	7.06	7.26	7.36	7.75	8.25		
23	1.441	36	2.256	1.565	2.97	4.07	4.46	4.95	5.05	5.45	5.94	6.92	7.62	8.21	8.41	8.50	8.90	9.39		
28	1.754	44	2.757	1.571					4.40	4.80	5.29	6.28	6.97	7.56	7.76	7.86	8.25	8.75		
19	1.191	30	1.880	1.579	3.48	4.57	4.96	5.45	5.55	5.94	6.44	7.42	8.11	8.70	8.90	9.00	9.39	9.89		
38	2.381	60	3.760	1.579					3.47	3.98	4.49	5.47	6.16	6.75	6.95	7.05	7.44	7.94		
24	1.504	38	2.381	1.583	2.82	3.91	4.31	4.80	4.90	5.30	5.79	6.77	7.47	8.06	8.26	8.35	8.75	9.24		
20	1.253	32	2.005	1.600	3.32	4.42	4.81	5.30	5.40	5.79	6.29	7.27	7.96	8.55	8.75	8.85	9.24	9.74		
25	1.566	40	2.506	1.600	2.67	3.76	4.16	4.65	4.75	5.15	5.64	6.63	7.32	7.91	8.11	8.20	8.60	9.09		
30	1.880	48	3.008	1.600					4.09	4.49	4.99	5.97	6.67	7.26	7.46	7.55	7.95	8.45		
40	2.506	64	4.010	1.600					4.09	4.49	4.99	5.97	6.67	7.26	7.46	7.55	7.95	8.45		
45	2.820	72	4.511	1.600								3.99	4.70	5.29	5.50	5.59	5.99	6.49		
50	3.133	80	5.013	1.600										4.63	4.83	4.93	5.33	5.83		
28	1.754	45	2.820	1.607					3.36	3.75	4.25	4.34	4.74	5.24	6.22	6.92	7.51	8.10		
56	3.509	90	5.639	1.607																
21	1.316	34	2.130	1.619	3.17	4.26	4.66	5.15	5.25	5.64	6.14	7.12	7.81	8.40	8.60	8.70	9.09	9.59		
32	2.005	52	3.258	1.625					3.78	4.18	4.68	5.67	6.37	6.96	7.16	7.25	7.65	8.15		
22	1.379	36	2.256	1.636	3.02	4.11	4.50	5.00	5.10	5.49	5.99	6.97	7.66	8.25	8.45	8.55	8.94	9.44		
44	2.757	72	4.511	1.636					4.04	4.44	4.94	5.92	6.61	7.20	7.40	7.50	7.89	8.39		
34	2.130	56	3.509	1.647					3.38	3.47	3.87	4.38	5.37	6.06	6.66	6.86	7.25	7.75		
68	4.261	112	7.018	1.647																
23	1.441	38	2.381	1.652	2.86	3.96	4.35	4.85	4.95	5.34	5.84	6.82	7.51	8.10	8.30	8.40	8.80	9.29		
18	1.128	30	1.880	1.667	3.52	4.61	5.00	5.50	5.59	5.99	6.49	7.47	8.16	8.75	8.95	9.04	9.44	9.94		
24	1.504	40	2.506	1.667	2.71	3.81	4.20	4.70	4.79	5.19	5.69	6.67	7.36	7.95	8.16	8.25	8.65	9.14		
30	1.880	50	3.133	1.667					3.98	4.38	4.88	5.87	6.56	7.16	7.36	7.45	7.85	8.34		
36	2.256	60	3.760	1.667					3.56	4.07	4.57	5.56	6.25	6.85	7.05	7.14	7.54	8.03		
48	3.008	80	5.013	1.667										4.71	4.92	5.01	5.42	5.92		
19	1.191	32	2.005	1.684	3.37	4.46	4.85	5.35	5.44	5.84	6.34	7.32	8.01	8.60	8.80	8.90	9.29	9.79		
38	2.381	64	4.010	1.684					3.75	4.25	4.75	5.74	6.43	7.02	7.22	7.31	7.71	8.20		
26	1.629	44	2.757	1.692					4.49	4.89	5.39	6.37	7.06	7.65	7.85	7.95	8.35	8.84		
20	1.253	34	2.130	1.700	3.22	4.31	4.70	5.20	5.29	5.69	6.19	7.17	7.86	8.45	8.65	8.75	9.14	9.64		
40	2.506	68	4.261	1.700					5.29	5.69	6.19	7.17	7.86	8.45	8.65	8.75	9.14	9.64		
21	1.316	36	2.256	1.714	3.06	4.16	4.55	5.05	5.14	5.54	6.04	7.02	7.71	8.30	8.50	8.60	8.99	9.49		
28	1.754	48	3.008	1.714					4.18	4.58	5.08	6.07	6.76	7.35	7.55	7.65	8.05	8.54		
22	1.379	38	2.381	1.727	2.91	4.01	4.40	4.90	4.99	5.39	5.89	6.87	7.56	8.15	8.35	8.45	8.84	9.34		
26	1.629	45	2.820	1.731					4.44	4.83	5.33	6.32	7.01	7.60	7.80	7.90	8.29	8.79		
52	3.258	90	5.639	1.731					4.27	4.77	5.27	6.26	6.95	7.54	7.74	7.84	8.23	8.73		
30	1.880	52	3.258	1.733	2.75	3.85	4.25	4.75	4.84	5.24	5.74	6.72	7.41	8.00	8.20	8.30	8.69	9.19		
23	1.441	40	2.506	1.739					3.46	3.56	3.96	4.47	5.46	6.15	6.35	6.45	6.84	7.34		
32	2.005	56	3.509	1.750																
64	4.010	112	7.018	1.750																
25	1.566	44	2.757	1.760					3.54	3.94	4.44	4.54	4.93	5.43	6.42	7.11	7.70	8.29		
34	2.130	60	3.760	1.765										3.65	4.15	4.65	5.64	6.33		
18	1.128	32	2.005	1.778	3.42	4.51	4.90	5.40	5.49	5.89	6.38	7.37	8.06	8.65	8.85	8.94	9.34	9.83		
36	2.256	64	4.010	1.778								3.84	4.84	5.54	6.14	6.34	6.43	6.83		
45	2.820	80	5.013	1.778										4.24	4.84	5.05	5.45	5.95		
28	1.754	50	3.133	1.786					3.07	3.47	3.98	4.07	4.47	4.97	5.96	6.66	7.25	7.84		
19	1.191	34	2.130	1.789	3.26	4.36	4.75	5.25	5.34	5.74	6.23	7.22	7.91	8.50	8.70	8.79	9.19	9.69		
38	2.381	68	4.261	1.789										4.53	5.23	5.83	6.03	6.43		
20	1.253	36	2.256	1.800	3.11	4.20	4.60	5.09	5.19	5.59	6.08	7.07	7.76	8.35	8.55	8.64	9.04	9.54		
25	1.566	45	2.820	1.800					3.49	3.88	4.39	4.48	4.88	5.38	6.36	7.06	7.65	8.24		
40	2.506	72	4.511																	

Center Distance, Inches													Speed Ratio	Sprocket Combinations			
650-5MGT P.L. 25.590 130 Teeth	700-5MGT P.L. 27.550 140 Teeth	750-5MGT P.L. 29.528 150 Teeth	800-5MGT P.L. 31.496 160 Teeth	815-5MGT P.L. 32.087 163 Teeth	850-5MGT P.L. 33.465 170 Teeth	900-5MGT P.L. 35.433 180 Teeth	1000-5MGT P.L. 39.370 200 Teeth	1150-5MGT P.L. 45.276 230 Teeth	1300-5MGT P.L. 51.181 260 Teeth	1450-5MGT P.L. 57.087 290 Teeth	1600-5MGT P.L. 62.992 320 Teeth	1720-5MGT P.L. 67.716 344 Teeth		1755-5MGT P.L. 69.094 351 Teeth	2100-5MGT P.L. 82.877 420 Teeth	DriveR	DriveN
																No. of Grooves	No. of Grooves
10.13	11.12	12.10	13.09	13.38	14.07	15.05	17.02	19.98	22.93	25.89	28.84	31.20	31.89	38.68	1.455	22	32
7.45	8.44	9.43	10.42	10.71	11.40	12.38	14.36	17.31	20.27	23.22	26.17	28.54	29.22	36.02	1.455	44	64
9.64	10.62	11.61	12.59	12.89	13.58	14.56	16.53	19.49	22.44	25.39	28.34	30.71	31.39	38.19	1.462	26	38
9.14	10.13	11.11	12.10	12.40	13.08	14.07	16.04	18.99	21.94	24.90	27.85	30.21	30.90	37.70	1.467	30	44
8.65	9.63	10.62	11.61	11.90	12.59	13.57	15.54	18.50	21.45	24.41	27.36	29.72	30.41	37.20	1.471	34	50
10.48	11.46	12.45	13.43	13.73	14.41	15.40	17.37	20.33	23.28	26.23	29.18	31.55	32.23	39.03	1.474	19	28
8.15	9.14	10.12	11.11	11.41	12.09	13.08	15.05	18.01	20.96	23.91	26.86	29.23	29.91	36.71	1.474	38	56
9.98	10.97	11.96	12.94	13.24	13.92	14.91	16.88	19.83	22.78	25.74	28.69	31.05	31.74	38.53	1.478	23	34
10.33	11.32	12.30	13.29	13.58	14.27	15.25	17.22	20.18	23.13	26.08	29.03	31.40	32.08	38.88	1.500	20	30
9.83	10.82	11.81	12.79	13.09	13.77	14.76	16.73	19.68	22.63	25.59	28.54	30.90	31.59	38.39	1.500	24	36
9.09	10.08	11.06	12.05	12.34	13.03	14.02	15.99	18.94	21.89	24.85	27.80	30.16	30.85	37.65	1.500	30	45
8.84	9.83	10.82	11.80	12.10	12.78	13.77	15.74	18.70	21.65	24.60	27.55	29.92	30.60	37.40	1.500	32	48
7.85	8.84	9.82	10.81	11.11	11.79	12.78	14.75	17.71	20.66	23.62	26.57	28.93	29.62	36.41	1.500	40	60
6.85	7.84	8.83	9.82	10.11	10.80	11.79	13.76	16.72	19.67	22.63	25.58	27.94	28.63	35.43	1.500	48	72
5.33	6.33	7.32	8.31	8.61	9.30	10.29	12.27	15.23	18.18	21.14	24.09	26.46	27.15	33.95	1.500	60	90
7.20	8.19	9.18	10.16	10.46	11.15	12.13	14.11	17.06	20.02	22.97	25.92	28.29	28.97	35.77	1.511	45	68
9.69	10.67	11.66	12.64	12.94	13.62	14.61	16.58	19.54	22.49	25.44	28.39	30.76	31.44	38.24	1.520	25	38
10.18	11.17	12.15	13.14	13.43	14.12	15.10	17.07	20.03	22.98	25.93	28.88	31.25	31.93	38.73	1.524	21	32
8.54	9.53	10.52	11.50	11.80	12.49	13.47	15.44	18.40	21.35	24.31	27.26	29.62	30.31	37.10	1.529	34	52
9.54	10.52	11.51	12.49	12.79	13.48	14.46	16.43	19.39	22.34	25.29	28.24	30.61	31.29	38.09	1.538	26	40
6.24	7.23	8.22	9.21	9.51	10.20	11.18	13.16	16.12	19.07	22.03	24.98	27.35	28.04	34.83	1.538	52	80
10.03	11.02	12.00	12.99	13.28	13.97	14.95	16.92	19.88	22.83	25.79	28.74	31.10	31.79	38.58	1.545	22	34
7.24	8.23	9.22	10.21	10.51	11.19	12.18	14.15	17.11	20.06	23.02	25.97	28.34	29.02	35.82	1.545	44	68
10.53	11.51	12.50	13.48	13.78	14.46	15.45	17.42	20.37	23.32	26.28	29.23	31.59	32.28	39.08	1.556	18	28
8.24	9.23	10.22	11.20	11.50	12.19	13.17	15.14	18.10	21.05	24.01	26.96	29.33	30.01	36.81	1.556	36	56
8.74	9.73	10.71	11.70	12.00	12.68	13.67	15.64	18.60	21.55	24.50	27.45	29.82	30.50	37.30	1.563	32	50
9.88	10.87	11.85	12.84	13.14	13.82	14.81	16.78	19.73	22.68	25.64	28.59	30.95	31.64	38.43	1.565	23	36
9.24	10.22	11.21	12.20	12.49	13.18	14.16	16.13	19.09	22.04	25.00	27.95	30.31	31.00	37.79	1.571	28	44
10.38	11.36	12.35	13.33	13.63	14.31	15.30	17.27	20.23	23.18	26.13	29.08	31.45	32.13	38.93	1.579	19	30
7.94	8.93	9.92	10.91	11.20	11.89	12.87	14.85	17.80	20.76	23.71	26.66	29.03	29.71	36.51	1.579	38	60
9.73	10.72	11.71	12.69	12.99	13.67	14.66	16.63	19.58	22.53	25.49	28.44	30.81	31.49	38.29	1.583	24	38
10.23	11.21	12.20	13.19	13.48	14.17	15.15	17.12	20.08	23.03	25.98	28.93	31.30	31.98	38.78	1.600	20	32
9.59	10.57	11.56	12.54	12.84	13.52	14.51	16.48	19.44	22.39	25.34	28.29	30.66	31.34	38.14	1.600	25	40
8.94	9.92	10.91	11.90	12.19	12.88	13.86	15.84	18.79	21.74	24.70	27.65	30.02	30.70	37.50	1.600	30	48
7.64	8.63	9.62	10.61	10.90	11.59	12.57	14.55	17.51	20.46	23.42	26.37	28.73	29.42	36.21	1.600	40	64
6.99	7.98	8.97	9.96	10.25	10.94	11.93	13.90	16.86	19.81	22.77	25.72	28.09	28.77	35.57	1.600	45	72
6.33	7.32	8.31	9.30	9.60	10.29	11.28	13.25	16.21	19.17	22.13	25.08	27.45	28.13	34.93	1.600	50	80
9.19	10.17	11.16	12.15	12.44	13.13	14.11	16.08	19.04	21.99	24.95	27.90	30.26	30.95	37.74	1.607	28	45
5.51	6.51	7.50	8.50	8.80	9.49	10.48	12.45	15.42	18.37	21.33	24.29	26.65	27.34	34.14	1.607	56	90
10.08	11.07	12.05	13.04	13.33	14.02	15.00	16.97	19.93	22.88	25.84	28.79	31.15	31.84	38.63	1.619	21	34
8.64	9.63	10.61	11.60	11.89	12.58	13.57	15.54	18.50	21.45	24.40	27.35	29.72	30.40	37.20	1.625	32	52
9.93	10.92	11.90	12.89	13.18	13.87	14.85	16.82	19.78	22.73	25.69	28.64	31.00	31.69	38.48	1.636	22	36
7.03	8.02	9.01	10.00	10.30	10.99	11.97	13.95	16.91	19.86	22.82	25.77	28.14	28.82	35.62	1.636	44	72
8.34	9.33	10.31	11.30	11.60	12.28	13.27	15.24	18.20	21.15	24.11	27.06	29.42	30.11	36.90	1.647	34	56
9.78	10.77	11.75	12.74	13.03	13.72	14.71	16.68	19.63	22.58	25.54	28.49	30.85	31.54	38.34	1.647	68	112
10.43	11.41	12.40	13.38	13.68	14.36	15.35	17.32	20.27	23.22	26.18	29.13	31.50	32.18	38.98	1.667	18	30
9.63	10.62	11.60	12.59	12.89	13.57	14.56	16.53	19.48	22.43	25.39	28.34	30.71	31.39	38.19	1.667	24	40
8.84	9.82	10.81	11.80	12.09	12.78	13.76	15.74	18.69	21.64	24.60	27.55	29.92	30.60	37.40	1.667	30	50
8.03	9.02	10.01	11.00	11.30	11.98	12.97	14.94	17.90	20.85	23.81	26.76	29.13	29.81	36.61	1.667	36	60
6.42	7.41	8.41	9.40	9.69	10.38	11.37	13.35	16.31	19.26	22.22	25.18	27.54	28.23	35.03	1.667	48	80
10.28	11.26	12.25	13.23	13.53	14.21	15.20	17.17	20.13	23.08	26.03	28.98	31.35	32.03	38.83	1.684	19	32
7.73	8.72	9.71	10.70	11.00	11.68	12.67	14.64	17.60	20.55	23.51	26.46	28.83	29.51	36.31	1.684	38	64
9.33	10.32	11.31	12.29	12.59	13.27	14.26	16.23	19.19	22.14	25.09	28.04	30.41	31.10	37.89	1.692	26	44
10.13	11.11	12.10	13.09	13.38	14.07	15.05	17.02	19.98	22.93	25.88	28.83	31.20	31.88	38.68	1.700	20	34
7.43	8.42	9.41	10.40	10.69	11.38	12.37	14.34	17.30	20.26	23.21	26.17	28.53	29.22	36.01	1.700	40	68
9.98	10.96	11.95	12.94	13.23	13.92	14.90	16.87	19.83	22.78	25.74	28.69	31.05	31.74	38.53	1.714	21	36
9.03	10.02	11.01	11.99	12.29	12.97	13.96	15.93	18.89	21.84	24.80	27.75	30.11	30.80	37.59	1.714	28	48
9.83	10.82	11.80	12.79	13.08	13.77	14.75	16.72	19.68	22.63	25.59	28.54	30.90	31.59	38.38	1.727	22	38
9.28	10.27	11.26	12.24	12.54	13.22	14.21	16.18	19.14	22.09	25.04	27.99	30.36	31.05	37.84	1.731	26	45
5.68	6.69	7.68	8.68	8.98	9.67	10.66	12.64	15.61	18.56	21.52	24.48	26.85	27.53	34.33	1.731	52	90
8.73	9.72	10.71	11.69	11.99	12.68	13.66	15.63	18.59	21.54	24.50	27.45	29.82	30.50	37.30	1.733	30	52
9.68	10.67	11.65	12.64	12.93	13.62	14.61	16.58	19.53	22.48	25.44	28.39	30.76	31.44	38.24	1.739	23	40
8.43	9.42	10.41	11.39	11.69	12.38	13.36	15.34	18.29	21.25	24.20	27.15	29.52	30.20	37.00	1.750	32	56
9.38	10.37	11.35	12.34	12.64	13.32	14.31	16.28	19.24	22.19	25.14	28.09	30.46	31.14	37.94	1.760	25	44
8.13	9.12	10.11	11.09	11.39	12.08	13.06	15.04	18.00	20.95	23.91	26.86	29.22	29.91	36.70	1.765	34	60
10.33	11.31	12.30	13.28	13.58	14.26	15.25	17.22	20.17	23.13	26.08	29.						

Sprocket Combinations				Speed Ratio	Center Distance, Inches															
DriveR		DriveN																		
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)		300-5MGT P.L. 11.811 60 Teeth	355-5MGT P.L. 13.976 71 Teeth	375-5MGT P.L. 14.764 75 Teeth	400-5MGT P.L. 15.748 80 Teeth	405-5MGT P.L. 15.945 81 Teeth	425-5MGT P.L. 16.732 85 Teeth	450-5MGT P.L. 17.716 90 Teeth	500-5MGT P.L. 19.685 100 Teeth	535-5MGT P.L. 21.053 107 Teeth	565-5MGT P.L. 22.244 113 Teeth	575-5MGT P.L. 22.638 115 Teeth	590-5MGT P.L. 22.835 116 Teeth	600-5MGT P.L. 23.622 120 Teeth	625-5MGT P.L. 24.066 125 Teeth		
24	1.504	45	2.820	1.875		3.53	3.93	4.43	4.53	4.92	5.42	6.41	7.10	7.90	7.99	8.39	8.88			
32	2.005	60	3.760	1.875				4.43	4.53	4.92	5.42	6.41	7.10	7.90	7.99	8.39	8.88			
48	3.008	90	5.639	1.875																
34	2.130	64	4.010	1.882								3.41	3.92	4.93	5.63	6.23	6.43	6.52		
18	1.128	34	2.130	1.889	3.31	4.40	4.79	5.29	5.39	5.78	6.28	7.26	7.96	8.55	8.75	8.84	9.24	9.73		
36	2.256	68	4.261	1.889								3.60	4.61	5.32	5.92	6.12	6.22	6.62		
19	1.191	36	2.256	1.895	3.15	4.25	4.64	5.14	5.24	5.63	6.13	7.11	7.80	8.40	8.60	8.69	9.09	9.58		
38	2.381	72	4.511	1.895								4.29	5.00	5.61	5.81	5.91	6.31	6.81		
20	1.253	38	2.381	1.900	3.00	4.10	4.49	4.99	5.08	5.48	5.98	6.96	7.66	8.25	8.45	8.54	8.94	9.43		
21	1.316	40	2.506	1.905	2.84	3.94	4.34	4.84	4.93	5.33	5.83	6.81	7.50	8.10	8.30	8.39	8.79	9.28		
23	1.441	44	2.757	1.913	2.52	3.63	4.03	4.53	4.63	5.02	5.52	6.51	7.20	7.80	8.00	8.09	8.49	8.98		
25	1.566	48	3.008	1.920								6.21	6.90	7.49	7.69	7.79	8.19	8.68		
26	1.629	50	3.133	1.923		3.16	3.56	4.07	4.16	4.56	5.06	6.05	6.75	7.34	7.54	7.64	8.03	8.53		
23	1.441	45	2.820	1.957	2.46	3.58	3.97	4.48	4.57	4.97	5.47	6.46	7.15	7.74	7.94	8.04	8.44	8.93		
18	1.128	36	2.256	2.000	3.20	4.30	4.69	5.19	5.28	5.68	6.18	7.16	7.85	8.44	8.64	8.74	9.13	9.63		
19	1.191	38	2.381	2.000	3.04	4.14	4.54	5.03	5.13	5.53	6.03	7.01	7.70	8.29	8.49	8.59	8.98	9.48		
20	1.253	40	2.506	2.000	2.88	3.99	4.38	4.88	4.98	5.38	5.87	6.86	7.55	8.14	8.34	8.44	8.84	9.33		
22	1.379	44	2.757	2.000	2.56	3.68	4.07	4.57	4.67	5.07	5.57	6.56	7.25	7.84	8.04	8.14	8.53	9.03		
24	1.504	48	3.008	2.000		3.36	3.76	4.26	4.36	4.76	5.26	6.25	6.95	7.54	7.74	7.84	8.23	8.73		
25	1.566	50	3.133	2.000		3.20	3.60	4.11	4.21	4.61	5.11	6.10	6.79	7.39	7.59	7.68	8.08	8.58		
26	1.629	52	3.258	2.000		3.04	3.45	3.95	4.05	4.45	4.95	5.95	6.64	7.24	7.44	7.53	7.93	8.43		
28	1.754	56	3.509	2.000			3.12	3.64	3.73	4.14	4.64	5.64	6.34	6.93	7.13	7.23	7.63	8.12		
30	1.880	60	3.760	2.000				3.31	3.41	3.82	4.33	5.33	6.03	6.62	6.83	6.92	7.32	7.82		
32	2.005	64	4.010	2.000						3.50	4.01	5.02	5.72	6.32	6.52	6.61	7.01	7.51		
34	2.130	68	4.261	2.000								3.69	4.70	5.41	6.01	6.21	6.31	6.71		
36	2.256	72	4.511	2.000								4.38	5.09	5.69	5.90	5.99	6.40	6.90		
40	2.506	80	5.013	2.000									4.45	5.06	5.26	5.36	5.77	6.27		
45	2.820	90	5.639	2.000										5.06	5.26	5.36	5.77	6.27		
56	3.509	112	7.018	2.000										4.45	4.55	4.96	5.48	5.98		
22	1.379	45	2.820	2.045	2.50	3.62	4.02	4.52	4.62	5.02	5.51	6.50	7.20	7.79	7.99	8.09	8.48	8.98		
44	2.757	90	5.639	2.045										4.49	4.59	5.01	5.52	6.02		
25	1.566	52	3.258	2.080		3.08	3.49	4.00	4.09	4.50	5.00	5.99	6.69	7.28	7.48	7.58	7.98	8.47		
24	1.504	50	3.133	2.083		3.25	3.65	4.15	4.25	4.65	5.15	6.14	6.84	7.43	7.63	7.73	8.13	8.62		
23	1.441	48	3.008	2.087		3.41	3.80	4.31	4.41	4.81	5.31	6.30	6.99	7.59	7.79	7.88	8.28	8.78		
21	1.316	44	2.757	2.095	2.61	3.72	4.12	4.62	4.72	5.12	5.61	6.60	7.30	7.89	8.09	8.18	8.58	9.08		
19	1.191	40	2.506	2.105	2.93	4.03	4.43	4.93	5.02	5.42	5.92	6.91	7.60	8.19	8.39	8.49	8.88	9.38		
38	2.381	80	5.013	2.105									4.53	5.14	5.35	5.45	5.85	6.36		
18	1.128	38	2.381	2.111	3.09	4.19	4.58	5.08	5.18	5.57	6.07	7.06	7.75	8.34	8.54	8.64	9.03	9.53		
34	2.130	72	4.511	2.118								4.46	5.18	5.78	5.98	6.08	6.48	6.99		
32	2.005	68	4.261	2.125								4.79	5.49	6.09	6.30	6.39	6.79	7.30		
30	1.880	64	4.010	2.133									4.09	5.10	5.81	6.41	6.61	7.10		
21	1.316	45	2.820	2.143	2.54	3.66	4.06	4.56	4.66	5.06	5.56	6.55	7.24	7.84	8.04	8.13	8.53	9.03		
28	1.754	60	3.760	2.143				3.40	3.49	3.90	4.41	5.42	6.12	6.71	6.92	7.01	7.41	7.91		
26	1.629	56	3.509	2.154			3.21	3.72	3.82	4.22	4.73	5.73	6.43	7.02	7.22	7.32	7.72	8.22		
52	3.258	112	7.018	2.154																
24	1.504	52	3.258	2.167		3.13	3.53	4.04	4.14	4.54	5.04	6.04	6.73	7.33	7.53	7.62	8.02	8.52		
23	1.441	50	3.133	2.174		3.29	3.69	4.20	4.29	4.70	5.20	6.19	6.89	7.48	7.68	7.78	8.17	8.67		
22	1.379	48	3.008	2.182		3.45	3.85	4.35	4.45	4.85	5.35	6.34	7.04	7.63	7.83	7.93	8.32	8.82		
20	1.253	44	2.757	2.200	2.65	3.77	4.16	4.66	4.76	5.16	5.66	6.65	7.34	7.93	8.14	8.23	8.63	9.12		
18	1.128	40	2.506	2.222	2.97	4.08	4.47	4.97	5.07	5.47	5.97	6.95	7.64	8.24	8.44	8.53	8.93	9.43		
36	2.256	80	5.013	2.222								3.88	4.61	5.23	5.44	5.53	5.94	6.45		
25	1.566	56	3.509	2.240			3.25	3.76	3.86	4.27	4.77	5.77	6.47	7.07	7.27	7.36	7.76	8.26		
50	3.133	112	7.018	2.240																
20	1.253	45	2.820	2.250	2.59	3.71	4.11	4.61	4.71	5.11	5.61	6.59	7.29	7.88	8.08	8.18	8.58	9.07		
32	2.005	72	4.511	2.250							3.52	4.55	5.26	5.87	6.07	6.17	6.57	7.08		
40	2.506	90	5.639	2.250										4.44	4.66	4.76	5.17	5.69		
23	1.441	52	3.258	2.261		3.17	3.57	4.08	4.18	4.58	5.09	6.08	6.78	7.37	7.57	7.67	8.07	8.57		
30	1.880	68	4.261	2.267								4.87	5.58	6.18	6.39	6.48	6.88	7.39		
22	1.379	50	3.133	2.273		3.33	3.73	4.24	4.34	4.74	5.24	6.23	6.93	7.53	7.73	7.82	8.22	8.72		
21	1.316	48	3.008	2.286		3.49	3.89	4.40	4.49	4.90	5.40	6.39	7.08	7.68	7.88	7.97	8.37	8.87		
28	1.754	64	4.010	2.286									4.18	5.19	5.89	6.49	6.70	7.19		
26	1.629	60	3.760	2.308				3.48	3.58	3.99	4.50	5.50	6.21	6.80	7.01	7.10	7.50	8.00		
19	1.191	44	2.757	2.316	2.69	3.81	4.21	4.71	4.81	5.21	5.71	6.69	7.39	7.98	8.18	8.28	8.67	9.17		
24	1.504	56	3.509	2.333		2.88	3.29	3.80	3.90	4.31	4.82	5.82	6.52	7.11	7.31	7.41	7.81	8.31		
48	3.008	112	7.018	2.333																
34	2.130	80	5.013	2.353									3.96	4.70	5.31	5.52	5.62	6.03		
22	1.379	52	3.258	2.364									6.13	6.82	7.42	7.62	7.72	8.11		
19	1.191	45	2.820	2.368	2.63	3.75	4.15	4.65	4.75	5.15	5.65	6.64	7.33	7.93	8.13	8.22	8.62	9.12		
38	2.381	90	5.639	2.368										4.52	4.74	4.84	5.26	5.77		
21	1.316	50	3.133	2.381		3.37	3.78	4.28	4.38	4.78	5.29	6.28	6.98	7.57	7.77	7.87	8.27	8.76		
20	1.253	48	3.008	2.400		3.53	3.94	4.44	4.54	4.94	5.44	6.43	7.13	7.72	7.92	8.02	8.42	8.92		
25	1.566	60	3.760	2.400			2.99	3.52	3.62	4.03	4.54	5.55	6.25	6.85	7.05	7.15	7.55	8.05		
30	1.880	72	4.511	2.400									4.63	5.35	5.95	6.16	6.26	6.66		
28	1.754	68	4.261	2.429							3.41	3.93	4.96	5.67	6.27	6.47	6.57	6.97		
23	1.441	56	3.509	2.435		2.92	3.33	3.85	3.95	4.35	4.86	5.86	6.56	7.16	7.36	7.46	7.85	8.35		
18	1.128	44</																		

Center Distance, Inches																	Speed Ratio	Sprocket Combinations	
650-5MGT P.L. 25.590 130 Teeth	700-5MGT P.L. 27.559 140 Teeth	750-5MGT P.L. 29.528 150 Teeth	800-5MGT P.L. 31.496 160 Teeth	815-5MGT P.L. 32.087 163 Teeth	850-5MGT P.L. 33.465 170 Teeth	900-5MGT P.L. 35.433 180 Teeth	1000-5MGT P.L. 38.370 200 Teeth	1150-5MGT P.L. 45.276 230 Teeth	1300-5MGT P.L. 51.181 260 Teeth	1450-5MGT P.L. 57.087 290 Teeth	1600-5MGT P.L. 62.992 320 Teeth	1720-5MGT P.L. 67.776 344 Teeth	1755-5MGT P.L. 69.094 351 Teeth	2100-5MGT P.L. 82.677 420 Teeth	DriveR	DriveN			
															No. of Grooves	No. of Grooves			
9.38	10.36	11.35	12.34	12.63	13.32	14.30	16.28	19.23	22.18	25.14	28.09	30.46	31.14	37.94	1.875	24	45		
8.22	9.21	10.20	11.19	11.48	12.17	13.16	15.13	18.09	21.04	24.00	26.95	29.32	30.00	36.80	1.875	32	60		
5.86	6.86	7.86	8.86	9.16	9.85	10.84	12.83	15.79	18.75	21.71	24.67	27.04	27.72	34.52	1.875	48	90		
7.92	8.91	9.90	10.89	11.18	11.87	12.86	14.83	17.79	20.75	23.70	26.66	29.02	29.71	36.51	1.882	34	64		
10.22	11.21	12.20	13.18	13.48	14.16	15.15	17.12	20.07	23.03	25.98	28.93	31.30	31.98	38.78	1.889	18	34		
7.61	8.60	9.59	10.58	10.88	11.57	12.56	14.53	17.49	20.45	23.41	26.36	28.72	29.41	36.21	1.889	36	68		
10.07	11.06	12.05	13.03	13.33	14.01	15.00	16.97	19.93	22.88	25.83	28.78	31.15	31.83	38.63	1.895	19	36		
7.30	8.30	9.29	10.28	10.58	11.27	12.26	14.23	17.19	20.15	23.11	26.06	28.43	29.11	35.91	1.895	38	72		
9.92	10.91	11.90	12.88	13.18	13.86	14.85	16.82	19.78	22.73	25.68	28.64	31.00	31.69	38.48	1.900	20	38		
9.78	10.76	11.75	12.73	13.03	13.72	14.70	16.67	19.63	22.58	25.54	28.49	30.85	31.54	38.33	1.905	21	40		
9.48	10.46	11.45	12.44	12.73	13.42	14.40	16.37	19.33	22.28	25.24	28.19	30.56	31.24	38.04	1.913	23	44		
9.17	10.16	11.15	12.14	12.43	13.12	14.10	16.08	19.03	21.99	24.94	27.89	30.26	30.94	37.74	1.920	25	48		
9.02	10.01	11.00	11.99	12.28	12.97	13.95	15.93	18.88	21.84	24.79	27.74	30.11	30.80	37.59	1.923	26	50		
9.42	10.41	11.40	12.38	12.68	13.37	14.35	16.32	19.28	22.23	25.19	28.14	30.51	31.19	37.99	1.957	23	45		
10.12	11.11	12.09	13.08	13.38	14.06	15.05	17.02	19.97	22.93	25.88	28.83	31.20	31.88	38.68	2.000	18	36		
9.97	10.96	11.94	12.93	13.23	13.91	14.90	16.87	19.83	22.78	25.73	28.68	31.05	31.73	38.53	2.000	19	38		
9.82	10.81	11.80	12.78	13.08	13.76	14.75	16.72	19.68	22.63	25.59	28.54	30.90	31.59	38.38	2.000	20	40		
9.52	10.51	11.50	12.48	12.78	13.46	14.45	16.42	19.38	22.33	25.29	28.24	30.60	31.29	38.09	2.000	22	44		
9.22	10.21	11.20	12.18	12.48	13.16	14.15	16.12	19.08	22.03	24.99	27.94	30.31	30.99	37.79	2.000	24	48		
9.07	10.06	11.05	12.03	12.33	13.02	14.00	15.98	18.93	21.89	24.84	27.79	30.16	30.84	37.64	2.000	25	50		
8.92	9.91	10.90	11.88	12.18	12.87	13.85	15.83	18.78	21.74	24.69	27.64	30.01	30.70	37.49	2.000	26	52		
8.62	9.61	10.60	11.58	11.88	12.57	13.55	15.53	18.49	21.44	24.40	27.35	29.71	30.40	37.20	2.000	28	56		
8.31	9.30	10.29	11.28	11.58	12.26	13.25	15.23	18.19	21.14	24.10	27.05	29.42	30.10	36.90	2.000	30	60		
8.01	9.00	9.99	10.98	11.28	11.96	12.95	14.93	17.89	20.84	23.80	26.75	29.12	29.80	36.60	2.000	32	64		
7.70	8.70	9.69	10.68	10.97	11.66	12.65	14.63	17.59	20.54	23.50	26.45	28.82	29.51	36.30	2.000	34	68		
7.39	8.39	9.38	10.37	10.67	11.36	12.35	14.33	17.29	20.24	23.20	26.16	28.52	29.21	36.01	2.000	36	72		
6.77	7.77	8.77	9.76	10.06	10.75	11.74	13.72	16.69	19.64	22.60	25.56	27.93	28.61	35.41	2.000	40	80		
5.98	6.99	8.00	9.00	9.29	9.99	10.98	12.96	15.93	18.89	21.86	24.81	27.18	27.87	34.67	2.000	45	90		
9.47	10.46	6.25	7.27	7.57	8.28	9.28	11.28	14.26	17.23	20.20	23.16	25.53	26.22	33.03	2.000	56	112		
6.03	7.04	8.04	9.04	9.34	10.03	11.03	13.01	15.98	18.94	21.90	24.86	27.23	27.91	34.72	2.045	44	90		
8.97	9.96	10.94	11.93	12.23	12.91	13.90	15.87	18.83	21.78	24.74	27.69	30.06	30.74	37.54	2.080	25	52		
9.12	10.11	11.09	12.08	12.38	13.06	14.05	16.02	18.98	21.93	24.89	27.84	30.21	30.89	37.69	2.083	24	50		
9.27	10.26	11.24	12.23	12.53	13.21	14.20	16.17	19.13	22.08	25.04	27.99	30.36	31.04	37.84	2.087	23	48		
9.57	10.56	11.54	12.53	12.83	13.51	14.50	16.47	19.43	22.38	25.34	28.29	30.65	31.34	38.13	2.095	21	44		
9.87	10.86	11.84	12.83	13.12	13.81	14.80	16.77	19.73	22.68	25.63	28.58	30.95	31.63	38.43	2.105	19	40		
6.86	7.86	8.86	9.85	10.15	10.84	11.83	13.82	16.78	19.74	22.70	25.65	28.02	28.71	35.51	2.105	38	80		
10.02	11.01	11.99	12.98	13.27	13.96	14.95	16.92	19.87	22.83	25.78	28.73	31.10	31.78	38.58	2.111	18	38		
7.48	8.48	9.47	10.47	10.76	11.45	12.44	14.42	17.38	20.34	23.30	26.25	28.62	29.30	36.10	2.118	34	72		
7.79	8.79	9.78	10.77	11.07	11.75	12.74	14.72	17.68	20.64	23.60	26.55	28.92	29.60	36.40	2.125	32	68		
8.10	9.09	10.08	11.07	11.37	12.06	13.05	15.02	17.98	20.94	23.90	26.85	29.21	29.90	36.70	2.133	30	64		
9.52	10.50	11.49	12.48	12.77	13.46	14.45	16.42	19.38	22.33	25.29	28.24	30.60	31.29	38.08	2.143	21	45		
8.40	9.40	10.39	11.38	11.67	12.36	13.35	15.32	18.28	21.24	24.19	27.15	29.51	30.20	37.00	2.143	28	60		
8.71	9.70	10.69	11.68	11.97	12.66	13.65	15.62	18.58	21.53	24.49	27.44	29.81	30.50	37.29	2.154	26	56		
9.01	5.38	6.42	7.44	7.74	8.45	9.46	11.46	14.45	17.42	20.39	23.35	25.72	26.41	33.22	2.154	52	112		
9.16	10.00	10.99	11.98	12.27	12.96	13.95	15.92	18.88	21.83	24.79	27.74	30.11	30.79	37.59	2.167	24	52		
9.31	10.15	11.14	12.13	12.42	13.11	14.10	16.07	19.03	21.98	24.94	27.89	30.26	30.94	37.74	2.174	23	50		
9.92	10.30	11.29	12.28	12.57	13.26	14.25	16.22	19.18	22.13	25.09	28.04	30.40	31.09	37.89	2.182	22	48		
9.62	10.60	11.59	12.58	12.87	13.56	14.55	16.52	19.48	22.43	25.38	28.34	30.70	31.39	38.18	2.200	20	44		
9.92	10.90	11.89	12.88	13.17	13.86	14.84	16.82	19.77	22.73	25.68	28.63	31.00	31.68	38.48	2.222	18	40		
6.95	7.95	8.95	9.95	10.24	10.93	11.93	13.91	16.87	19.83	22.79	25.75	28.12	28.80	35.60	2.222	36	80		
8.76	9.75	10.74	11.72	12.02	12.71	13.69	15.67	18.63	21.58	24.54	27.49	29.86	30.54	37.34	2.240	25	56		
9.56	5.46	6.50	7.53	7.83	8.54	9.54	11.55	14.54	17.51	20.48	23.44	25.81	26.50	33.31	2.240	50	112		
7.57	10.55	11.54	12.53	12.82	13.51	14.49	16.47	19.43	22.38	25.33	28.29	30.65	31.34	38.13	2.250	20	45		
6.20	8.57	9.57	10.56	10.85	11.54	12.53	14.51	17.48	20.43	23.39	26.35	28.72	29.40	36.20	2.250	32	72		
9.06	7.21	8.22	9.22	9.52	10.21	11.21	13.19	16.17	19.13	22.09	25.05	27.42	28.10	34.91	2.250	40	90		
9.06	10.05	11.04	12.03	12.32	13.01	13.99	15.97	18.93	21.88	24.84	27.79	30.16	30.84	37.64	2.261	23	52		
7.88	8.88	9.87	10.86	11.16	11.85	12.84	14.81	17.78	20.73	23.69	26.65	29.01	29.70	36.50	2.267	30	68		
9.21	10.20	11.19	12.17	12.47	13.16	14.14	16.12	19.08	22.03	24.99	27.94	30.30	30.99	37.79	2.273	22	50		
9.36	10.35	11.34	12.32	12.62	13.31	14.29	16.27	19.23	22.18	25.13	28.09	30.45	31.14	37.93	2.286	21	48		
8.19	9.18	10.18	11.17	11.46	12.15	13.14	15.12	18.08	21.03	23.99	26.94	29.31	30.00	36.80	2.286	28	64		
8.50	9.49	10.48	11.47	11.76	12.45	13.44	15.42	18.38	21.33	24.29	27.24	29.61	30.29	37.09	2.308	26	60		
9.66	10.65	11.64	12.62	12.92	13.61	14.59	16.57	19.52	22.48	25.43	28.38	30.75	31.43	38.23	2.316	19	44		
8.80	9.79	10.78	11.77	12.07	12.75	13.74	15.72	18.68	21.63	24.59	27.54	29.91	30.59	37.39	2.333	24	56		
7.04	5.54	6.58	7.61	7.92	8.62	9.63	11.64	14.63	17.60	20.57	23.54	25.91	26.59	33.41	2.333	48	112		
9.10	8.04	9.04	10.04	10.33	11.03	12.02	14.00	16.97	19.93	22.89	25.84	28.21	28.90	35.70	2.353	34	80		
9.61	10.09	11.08	12.07	12.37	13.05	14.04	16.02	18.97	21.93	24.89	27.84	30.20	30.89						

Sprocket Combinations					Center Distance, Inches														
DriveR		DriveN		Speed Ratio	300-5MGT P.L. 11,811 60 Teeth	355-5MGT P.L. 13,976 71 Teeth	375-5MGT P.L. 14,764 75 Teeth	400-5MGT P.L. 15,748 80 Teeth	405-5MGT P.L. 15,945 81 Teeth	425-5MGT P.L. 16,732 85 Teeth	450-5MGT P.L. 17,716 90 Teeth	500-5MGT P.L. 19,685 100 Teeth	535-5MGT P.L. 21,063 107 Teeth	565-5MGT P.L. 22,244 113 Teeth	575-5MGT P.L. 22,638 115 Teeth	580-5MGT P.L. 22,835 116 Teeth	600-5MGT P.L. 23,622 120 Teeth	625-5MGT P.L. 24,606 125 Teeth	
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)		2.545	2.545	2.560	2.571	2.600	2.609	2.615	2.632	2.647	2.667	2.672	2.683	2.693	2.703	2.713
22	1.379	56	3.509	2.545															
44	2.757	112	7.018	2.545															
25	1.566	64	4.010	2.560															
28	1.754	72	4.511	2.571															
20	1.253	52	3.258	2.600															
23	1.441	60	3.760	2.609															
26	1.629	68	4.261	2.615															
19	1.191	50	3.133	2.632															
34	2.130	90	5.639	2.647															
18	1.128	48	3.008	2.667															
21	1.316	56	3.509	2.667															
24	1.504	64	4.010	2.667															
30	1.880	80	5.013	2.667															
25	1.566	68	4.261	2.720															
22	1.379	60	3.760	2.727															
19	1.191	52	3.258	2.737															
26	1.629	72	4.511	2.769															
18	1.128	50	3.133	2.778															
23	1.441	64	4.010	2.783															
20	1.253	56	3.509	2.800															
40	2.506	112	7.018	2.800															
32	2.005	90	5.639	2.813															
24	1.504	68	4.261	2.833															
21	1.316	60	3.760	2.857															
28	1.754	80	5.013	2.857															
25	1.566	72	4.511	2.880															
18	1.128	52	3.258	2.889															
22	1.379	64	4.010	2.909															
19	1.191	56	3.509	2.947															
38	2.381	112	7.018	2.947															
23	1.441	68	4.261	2.957															
20	1.253	60	3.760	3.000															
24	1.504	72	4.511	3.000															
30	1.880	90	5.639	3.000															
21	1.316	64	4.010	3.048															
26	1.629	80	5.013	3.077															
22	1.379	68	4.261	3.091															
18	1.128	56	3.509	3.111															
36	2.256	112	7.018	3.111															
23	1.441	72	4.511	3.130															
19	1.191	60	3.760	3.158															
20	1.253	64	4.010	3.200															
25	1.566	80	5.013	3.200															
28	1.754	90	5.639	3.214															
21	1.316	68	4.261	3.238															
22	1.379	72	4.511	3.273															
34	2.130	112	7.018	3.294															
18	1.128	60	3.760	3.333															
24	1.504	80	5.013	3.333															
19	1.191	64	4.010	3.368															
20	1.253	68	4.261	3.400															
21	1.316	72	4.511	3.429															
26	1.629	90	5.639	3.462															
23	1.441	80	5.013	3.478															
32	2.005	112	7.018	3.500															
18	1.128	64	4.010	3.556															
19	1.191	68	4.261	3.579															
20	1.253	72	4.511	3.600															
25	1.566	90	5.639	3.600															
22	1.379	80	5.013	3.636															
30	1.880	112	7.018	3.733															
24	1.504	90	5.639	3.750															
18	1.128	68	4.261	3.778															
19	1.191	72	4.511	3.789															
21	1.316	80	5.013	3.810															
23	1.441	90	5.639	3.913															
18	1.128	72	4.511	4.000															
20	1.253	80	5.013	4.000															
28	1.754	112	7.018	4.000															
22	1.379	90	5.639	4.091															
19	1.191	80	5.013	4.211															
21	1.316	90	5.639	4.286															
26	1.629	112	7.018	4.308															
18	1.128	80	5.013	4.444															
25	1.566	112	7.018	4.480															
20	1.253	90	5.639	4.500															
24	1.504	112	7.018	4.667															
19	1.191	90	5.639	4.737															
23	1.441	112	7.018	4.870															
18	1.128	90	5.639	5.000															
22	1.379	112	7.018	5.091															
21	1.316	112	7.018	5.333															
20	1.253	112	7.018	5.600															
19	1.191	112	7.018	5.895															
18	1.128	112	7.018	6.222															
Length Factor *					0.77	0.81	0.83	0.84	0.85	0.86	0.88	0.90	0.92	0.94	0.94	0.95	0.95	0.95	0.97

\* This length correction factor must be used to determine the proper belt width.

Teeth in Mesh Factor:

1.0

0.8

0.6

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.



		Center Distance, Inches																				Speed Ratio	Sprocket Combinations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
																							No. of Grooves	No. of Grooves																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
650-5MGT P.L. 25.590 130 Teeth	8.89	9.88	10.87	11.86	12.85	13.83	14.81	15.79	16.77	17.75	18.73	19.71	20.69	21.67	22.65	23.63	24.61	25.59	26.57	27.55	28.53	29.51	30.49	31.47	32.45	33.43	34.41	35.39	36.37	37.35	38.33	39.31	40.29	41.27	42.25	43.23	44.21	45.19	46.17	47.15	48.13	49.11	50.09	51.07	52.05	53.03	54.01	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00	63.00	64.00	65.00	66.00	67.00	68.00	69.00	70.00	71.00	72.00	73.00	74.00	75.00	76.00	77.00	78.00	79.00	80.00	81.00	82.00	83.00	84.00	85.00	86.00	87.00	88.00	89.00	90.00	91.00	92.00	93.00	94.00	95.00	96.00	97.00	98.00	99.00	100.00	101.00	102.00	103.00	104.00	105.00	106.00	107.00	108.00	109.00	110.00	111.00	112.00	113.00	114.00	115.00	116.00	117.00	118.00	119.00	120.00	121.00	122.00	123.00	124.00	125.00	126.00	127.00	128.00	129.00	130.00	131.00	132.00	133.00	134.00	135.00	136.00	137.00	138.00	139.00	140.00	141.00	142.00	143.00	144.00	145.00	146.00	147.00	148.00	149.00	150.00	151.00	152.00	153.00	154.00	155.00	156.00	157.00	158.00	159.00	160.00	161.00	162.00	163.00	164.00	165.00	166.00	167.00	168.00	169.00	170.00	171.00	172.00	173.00	174.00	175.00	176.00	177.00	178.00	179.00	180.00	181.00	182.00	183.00	184.00	185.00	186.00	187.00	188.00	189.00	190.00	191.00	192.00	193.00	194.00	195.00	196.00	197.00	198.00	199.00	200.00	201.00	202.00	203.00	204.00	205.00	206.00	207.00	208.00	209.00	210.00	211.00	212.00	213.00	214.00	215.00	216.00	217.00	218.00	219.00	220.00	221.00	222.00	223.00	224.00	225.00	226.00	227.00	228.00	229.00	230.00	231.00	232.00	233.00	234.00	235.00	236.00	237.00	238.00	239.00	240.00	241.00	242.00	243.00	244.00	245.00	246.00	247.00	248.00	249.00	250.00	251.00	252.00	253.00	254.00	255.00	256.00	257.00	258.00	259.00	260.00	261.00	262.00	263.00	264.00	265.00	266.00	267.00	268.00	269.00	270.00	271.00	272.00	273.00	274.00	275.00	276.00	277.00	278.00	279.00	280.00	281.00	282.00	283.00	284.00	285.00	286.00	287.00	288.00	289.00	290.00	291.00	292.00	293.00	294.00	295.00	296.00	297.00	298.00	299.00	300.00	301.00	302.00	303.00	304.00	305.00	306.00	307.00	308.00	309.00	310.00	311.00	312.00	313.00	314.00	315.00	316.00	317.00	318.00	319.00	320.00	321.00	322.00	323.00	324.00	325.00	326.00	327.00	328.00	329.00	330.00	331.00	332.00	333.00	334.00	335.00	336.00	337.00	338.00	339.00	340.00	341.00	342.00	343.00	344.00	345.00	346.00	347.00	348.00	349.00	350.00	351.00	352.00	353.00	354.00	355.00	356.00	357.00	358.00	359.00	360.00	361.00	362.00	363.00	364.00	365.00	366.00	367.00	368.00	369.00	370.00	371.00	372.00	373.00	374.00	375.00	376.00	377.00	378.00	379.00	380.00	381.00	382.00	383.00	384.00	385.00	386.00	387.00	388.00	389.00	390.00	391.00	392.00	393.00	394.00	395.00	396.00	397.00	398.00	399.00	400.00	401.00	402.00	403.00	404.00	405.00	406.00	407.00	408.00	409.00	410.00	411.00	412.00	413.00	414.00	415.00	416.00	417.00	418.00	419.00	420.00	421.00	422.00	423.00	424.00	425.00	426.00	427.00	428.00	429.00	430.00	431.00	432.00	433.00	434.00	435.00	436.00	437.00	438.00	439.00	440.00	441.00	442.00	443.00	444.00	445.00	446.00	447.00	448.00	449.00	450.00	451.00	452.00	453.00	454.00	455.00	456.00	457.00	458.00	459.00	460.00	461.00	462.00	463.00	464.00	465.00	466.00	467.00	468.00	469.00	470.00	471.00	472.00	473.00	474.00	475.00	476.00	477.00	478.00	479.00	480.00	481.00	482.00	483.00	484.00	485.00	486.00	487.00	488.00	489.00	490.00	491.00	492.00	493.00	494.00	495.00	496.00	497.00	498.00	499.00	500.00	501.00	502.00	503.00	504.00	505.00	506.00	507.00	508.00	509.00	510.00	511.00	512.00	513.00	514.00	515.00	516.00	517.00	518.00	519.00	520.00	521.00	522.00	523.00	524.00	525.00	526.00	527.00	528.00	529.00	530.00	531.00	532.00	533.00	534.00	535.00	536.00	537.00	538.00	539.00	540.00	541.00	542.00	543.00	544.00	545.00	546.00	547.00	548.00	549.00	550.00	551.00	552.00	553.00	554.00	555.00	556.00	557.00	558.00	559.00	560.00	561.00	562.00	563.00	564.00	565.00	566.00	567.00	568.00	569.00	570.00	571.00	572.00	573.00	574.00	575.00	576.00	577.00	578.00	579.00	580.00	581.00	582.00	583.00	584.00	585.00	586.00	587.00	588.00	589.00	590.00	591.00	592.00	593.00	594.00	595.00	596.00	597.00	598.00	599.00	600.00	601.00	602.00	603.00	604.00	605.00	606.00	607.00	608.00	609.00	610.00	611.00	612.00	613.00	614.00	615.00	616.00	617.00	618.00	619.00	620.00	621.00	622.00	623.00	624.00	625.00	626.00	627.00	628.00	629.00	630.00	631.00	632.00	633.00	634.00	635.00	636.00	637.00	638.00	639.00	640.00	641.00	642.00	643.00	644.00	645.00	646.00	647.00	648.00	649.00	650.00	651.00	652.00	653.00	654.00	655.00	656.00	657.00	658.00	659.00	660.00	661.00	662.00	663.00	664.00	665.00	666.00	667.00	668.00	669.00	670.00	671.00	672.00	673.00	674.00	675.00	676.00	677.00	678.00	679.00	680.00	681.00	682.00	683.00	684.00	685.00	686.00	687.00	688.00	689.00	690.00	691.00	692.00	693.00	694.00	695.00	696.00	697.00	698.00	699.00	700.00	701.00	702.00	703.00	704.00	705.00	706.00	707.00	708.00	709.00	710.00	711.00	712.00	713.00	714.00	715.00	716.00	717.00	718.00	719.00	720.00	721.00	722.00	723.00	724.00	725.00	726.00	727.00	728.00	729.00	730.00	731.00	732.00	733.00	734.00	735.00	736.00	737.00	738.00	739.00	740.00	741.00	742.00	743.00	744.00	745.00	746.00	747.00	748.00	749.00	750.00	751.00	752.00	753.00	754.00	755.00	756.00	757.00	758.00	759.00	760.00	761.00	762.00	763.00	764.00	765.00	766.00	767.00	768.00	769.00	770.00	771.00	772.00	773.00	774.00	775.00	776.00	777.00	778.00	779.00	780.00	781.00	782.00	783.00	784.00	785.00	786.00	787.00	788.00	789.00	790.00	791.00	792.00	793.00	794.00	795.00	796.00	797.00	798.00	799.00	800.00	801.00	802.00	803.00	804.00	805.00	806.00	807.00	808.00	809.00	810.00	811.00	812.00	813.00	814.00	815.00	816.00	817.00	818.00	819.00	820.00	821.00	822.00	823.00	824.00	825.00	826.00	827.00	828.00	829.00	830.00	831.00	832.00	833.00	834.00	835.00	836.00	837.00	838.00	839.00	840.00	841.00	842.00	843.00	844.00	845.00	846.00	847.00	848.00	849.00	850.00	851.00	852.00	853.00	854.00	855.00	856.00	857.00	858.00	859.00	860.00	861.00	862.00	863.00	864.00	865.00	866.00	867.00	868.00	869.00	870.00	871.00	872.00	873.00	874.00	875.00	876.00	877.00	878.00	879.00	880.00	881.00	882.00	883.00	884.00	885.00	886.00	887.00	888.00	889.00	890.00	891.00	892.00	893.00	894.00	895.00	896.00	897.00	898.00	899.00	900.00	901.00	902.00	903.00	904.00	905.00	906.00	907.00	908.00	909.00	910.00	911.00	912.00	913.00	914.00	915.00	916.00	917.00	918.00	919.00	920.00	921.00	922.00	923.00	924.00	925.00	926.00	927.00	928.00	929.00	930.00	931.00	932.00	933.00	934.00	935.00	936.00	937.00	938.00	939.00	940.00	941.00	942.00	943.00	944.00	945.00	946.00	947.00	948.00	949.00	950.00	951.00	952.00	953.00	954.00	955.00	956.00	957.00	958.00	959.00	960.00	961.00	962.00	963.00	964.00	965.00	966.00	967.00	968.00	969.00	970.00	971.00	972.00	973.00	974.00	975.00	976.00	977.00	978.00	979.00	980.00	981.00	982.00	983.00	984.00	985.00	986.00	987.00	988.00	989.00	990.00	991.00	992.00	993.00	994.00	995.00	996.00	997.00	998.00	999.00	1000.00	1001.00	1002.00	1003.00	1004.00	1005.00	1006.00	1007.00	1008.00	1009.00	1010.00	1011.00	1012.00	1013.00	1014.00	1015.00	1016.00	1017.00	1018.00	1019.00	1020.00	1021.00	1022.00	1023.00	1024.00	1025.00	1026.00	1027.00	1028.00	1029.00	1030.00	1031.00	1032.00	1033.00	1034.00	1035.00	1036.00	1037.00	1038.00	1039.00	1040.00	1041.00	1042.00	1043.00	1044.00	1045.00	1046.00	1047.00	1048.00	1049.00	1050.00	1051.00	1052.00	1053.00	1054.00	1055.00	1056.00	1057.00	1058.00	1059.00	1060.00	1061.00	1062.00	1063.00	1064.00	1065.00	1066.00	1067.00	1068.00	1069.00	1070.00	1071.00	1072.00	1073.00	1074.00	1075.00	1076.00	1077.00	1078.00	1079.00	1080.00	1081.00	1082.00	1083.00	1084.00	1085.00	1086.00	1087.00	1088.00	1089.00	1090.00	1091.00	1092.00	1093.00	1094.00	1095.00	1096.00	1097.00	1098.00	1099.00	1100.00	1101.00	1102.00	1103.00	1104.00	1105.00	1106.00	1107.00

Sprocket Combinations				Speed Ratio	Center Distance, Inches															
DriveR		DriveN			Center Distance, Inches															
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)		384-3MGT P.L. 15.118 46 teeth	480-3MGT P.L. 18.698 60 teeth	600-3MGT P.L. 22.047 70 teeth	600-3MGT P.L. 23.622 75 teeth	640-3MGT P.L. 25.197 80 teeth	720-3MGT P.L. 28.346 90 teeth	800-3MGT P.L. 31.496 100 teeth	840-3MGT P.L. 33.071 105 teeth	880-3MGT P.L. 34.646 110 teeth	920-3MGT P.L. 36.220 115 teeth	960-3MGT P.L. 37.795 120 teeth	1040-3MGT P.L. 40.945 130 teeth	1064-3MGT P.L. 41.680 133 teeth	1200-3MGT P.L. 45.069 140 teeth	1160-3MGT P.L. 45.669 145 teeth	
22	2.206	22	2.206	1.000	4.09	5.98	7.56	8.34	9.13	10.71	12.28	13.07	13.86	14.64	15.43	17.00	17.48	18.58	19.37	
24	2.406	24	2.406	1.000	3.78	5.67	7.25	8.03	8.82	10.40	11.97	12.76	13.55	14.33	15.12	16.69	17.17	18.27	19.06	
25	2.506	25	2.506	1.000	3.62	5.51	7.09	7.87	8.66	10.24	11.81	12.60	13.39	14.17	14.96	16.53	17.01	18.11	18.90	
26	2.607	26	2.607	1.000	3.46	5.35	6.93	7.71	8.50	10.08	11.65	12.44	13.23	14.01	14.80	16.37	16.85	17.95	18.74	
27	2.707	27	2.707	1.000	3.31	5.20	6.77	7.56	8.35	9.92	11.50	12.28	13.07	13.86	14.65	16.22	16.69	17.79	18.58	
28	2.807	28	2.807	1.000		5.04	6.62	7.40	8.19	9.77	11.34	12.13	12.92	13.70	14.49	16.06	16.54	17.64	18.43	
29	2.907	29	2.907	1.000		4.88	6.46	7.24	8.03	9.61	11.18	11.97	12.76	13.54	14.33	15.90	16.38	17.48	18.27	
30	3.008	30	3.008	1.000		4.73	6.30	7.09	7.88	9.45	11.03	11.81	12.60	13.39	14.18	15.75	16.22	17.32	18.11	
31	3.108	31	3.108	1.000		4.57	6.14	6.93	7.72	9.29	10.87	11.65	12.44	13.23	14.02	15.59	16.06	17.16	17.95	
32	3.208	32	3.208	1.000		4.41	5.99	6.77	7.56	9.14	10.71	11.50	12.29	13.07	13.86	15.43	15.91	17.01	17.80	
33	3.308	33	3.308	1.000		4.25	5.83	6.61	7.40	8.98	10.55	11.34	12.13	12.91	13.70	15.27	15.75	16.85	17.64	
34	3.409	34	3.409	1.000		4.10	5.67	6.46	7.25	8.82	10.40	11.18	11.97	12.76	13.55	15.12	15.59	16.69	17.48	
35	3.509	35	3.509	1.000			5.51	6.30	7.09	8.66	10.24	11.02	11.81	12.60	13.39	14.96	15.43	16.53	17.32	
36	3.609	36	3.609	1.000			5.36	6.14	6.93	8.51	10.08	10.87	11.66	12.44	13.23	14.80	15.28	16.38	17.17	
37	3.709	37	3.709	1.000			5.20	5.98	6.77	8.35	9.92	10.71	11.50	12.28	13.07	14.64	15.12	16.22	17.01	
38	3.810	38	3.810	1.000			5.04	5.83	6.62	8.19	9.77	10.55	11.34	12.13	12.92	14.49	14.96	16.06	16.85	
39	3.910	39	3.910	1.000			4.88	5.67	6.46	8.03	9.61	10.39	11.18	11.97	12.76	14.33	14.80	15.90	16.69	
40	4.010	40	4.010	1.000			4.73	5.51	6.30	7.88	9.45	10.24	11.03	11.81	12.60	14.17	14.65	15.75	16.54	
42	4.211	42	4.211	1.000				5.36	6.14	7.72	9.30	10.08	10.87	11.66	12.44	14.02	14.50	15.60	16.39	
44	4.411	44	4.411	1.000				5.67	6.46	8.04	9.61	10.40	11.18	11.97	12.76	14.33	14.80	15.90	16.69	
46	4.612	46	4.612	1.000					6.93	8.51	9.29	10.08	10.87	11.66	12.44	14.02	14.50	15.60	16.39	
48	4.812	48	4.812	1.000					6.62	8.19	8.98	9.77	10.55	11.34	12.13	13.70	14.17	15.27	16.06	
50	5.013	50	5.013	1.000					6.30	7.88	8.66	9.45	10.24	11.03	11.81	13.38	13.86	14.96	15.75	
53	5.314	53	5.314	1.000					5.83	7.40	8.19	8.98	9.76	10.55	11.34	12.91	13.39	14.49	15.28	
56	5.614	56	5.614	1.000						6.93	7.72	8.51	9.29	10.08	10.87	12.44	12.92	14.02	14.80	
64	6.416	64	6.416	1.000								7.25	8.03	8.82	9.61	11.18	11.66	12.76	13.55	
72	7.218	72	7.218	1.000												9.13	9.61	10.71	11.50	
80	8.020	80	8.020	1.000														9.45	10.24	
38	3.810	39	3.910	1.026		4.96	5.75	6.54	7.33	8.91	10.49	11.26	12.05	12.84	14.41	14.88	15.98	16.77		
39	3.910	40	4.010	1.026		4.80	5.59	6.38	7.17	8.75	10.33	11.10	11.89	12.68	14.25	14.72	15.82	16.61		
37	3.709	38	3.810	1.027		5.12	5.90	6.69	7.48	9.06	10.64	11.41	12.20	12.99	14.56	15.04	16.14	16.93		
36	3.609	37	3.709	1.028		5.28	6.06	6.85	7.64	9.22	10.80	11.57	12.36	13.15	14.72	15.20	16.30	17.09		
34	3.409	35	3.509	1.029	4.02	5.59	6.38	7.17	7.96	9.54	11.12	11.89	12.68	13.47	15.04	15.51	16.61	17.40		
35	3.509	36	3.609	1.029		5.43	6.22	7.01	7.80	9.38	10.96	11.73	12.52	13.31	14.88	15.35	16.45	17.24		
33	3.308	34	3.409	1.030	4.17	5.75	6.53	7.32	8.11	9.69	11.27	12.04	12.83	13.62	15.19	15.66	16.76	17.55		
32	3.208	33	3.308	1.031	4.33	5.91	6.69	7.48	8.27	9.85	11.43	12.20	12.99	13.78	15.35	15.83	16.93	17.72		
31	3.108	32	3.208	1.032	4.49	6.06	6.85	7.64	8.43	10.01	11.59	12.36	13.15	13.94	15.51	15.98	17.08	17.87		
30	3.008	31	3.108	1.033	4.65	6.22	7.01	7.80	8.59	10.17	11.75	12.52	13.31	14.10	15.67	16.14	17.24	18.03		
29	2.907	30	3.008	1.034	4.80	6.38	7.16	7.95	8.74	10.32	11.90	12.67	13.46	14.25	15.82	16.30	17.40	18.19		
28	2.807	29	2.907	1.036	4.96	6.54	7.32	8.11	8.90	10.48	12.06	12.83	13.62	14.41	15.98	16.46	17.56	18.35		
27	2.707	28	2.807	1.037		5.12	6.69	7.48	8.27	9.84	11.42	12.20	12.99	13.78	15.35	15.82	16.92	17.71		
26	2.607	27	2.707	1.038	3.39	5.28	6.85	7.64	8.43	10.00	11.58	12.36	13.15	13.94	15.51	16.00	17.10	17.89		
25	2.506	26	2.607	1.040	3.54	5.43	7.01	7.79	8.58	10.16	11.73	12.52	13.31	14.09	15.66	16.14	17.24	18.03		
24	2.406	25	2.506	1.042	3.70	5.59	7.17	7.95	8.74	10.32	11.89	12.68	13.47	14.25	15.82	16.30	17.40	18.19		
48	4.812	50	5.013	1.042						6.46	8.03	8.82	9.61	10.39	11.96	12.44	13.54	14.33		
46	4.612	48	4.812	1.043					5.20	6.77	8.35	9.13	9.92	10.71	12.28	12.76	13.86	14.65		
44	4.411	46	4.612	1.045					5.51	7.09	8.66	9.45	10.24	11.03	12.60	13.08	14.18	14.97		
42	4.211	44	4.411	1.048				5.04	5.83	7.40	8.98	9.76	10.55	11.34	12.91	13.39	14.49	15.28		
40	4.010	42	4.211	1.050					5.35	6.14	7.72	8.51	9.29	10.08	11.65	12.13	13.23	14.02		
38	3.810	40	4.010	1.053		4.88	5.67	6.46	7.25	8.82	10.40	11.18	11.97	12.76	14.33	14.80	15.90	16.69		
37	3.709	39	3.910	1.054		5.04	5.83	6.62	7.40	8.98	10.56	11.34	12.13	12.92	14.49	14.96	16.06	16.85		
36	3.609	38	3.810	1.056		5.20	5.98	6.77	7.56	9.14	10.71	11.50	12.28	13.07	14.64	15.12	16.22	17.01		
35	3.509	37	3.709	1.057		5.36	6.14	6.93	7.72	9.30	10.87	11.66	12.44	13.23	14.80	15.28	16.38	17.17		
53	5.314	56	5.614	1.057						7.17	8.74	9.53	10.31	11.10	12.67	13.15	14.25	15.04		
34	3.409	36	3.609	1.059		5.51	6.30	7.09	7.88	9.45	11.03	11.81	12.60	13.39	14.96	15.43	16.53	17.32		
50	5.013	53	5.314	1.060						6.06	7.64	8.42	9.21	10.00	11.57	12.05	13.15	13.94		
33	3.308	35	3.509	1.061	4.09	5.67	6.46	7.25	8.04	9.61	11.18	11.97	12.76	13.55	15.12	15.59	16.69	17.48		
32	3.208	34	3.409	1.063	4.25	5.83	6.61	7.40	8.19	9.77	11.34	12.13	12.92	13.70	15.27	15.75	16.85	17.64		
31	3.108	33	3.308	1.065	4.41	5.99	6.77	7.56	8.35	9.92	11.50	12.28	13.07	13.86	15.43	15.91	17.01	17.80		
30	3.008	32	3.208	1.067	4.57	6.14	6.93	7.72	8.51	10.08	11.65	12.44	13.23	14.02	15.59	16.06	17.16	17.95		
29	2.907	31	3.108	1.069	4.72	6.30	7.09	7.88	8.67	10.24	11.81	12.59	13.38	14.17	15.74	16.22	17.32	18.11		
28	2.807	30	3.008	1.071	4.88	6.46	7.24	8.03	8.82	10.39	11.97	12.76	13.54	14.33	15.90	16.38	17.48	18.27		
27	2.707	29	2.907	1.074	5.04	6.62	7.40	8.19	8.98	10.55	12.13	12.92	13.70	14.49	16.06	16.54	17.64	18.43		
26	2.607	28	2.807	1.077	3.31	5.20	6.77	7.56	8.35	9.92	11.50	12.28	13.07	13.86	15.43	15.91	17.01	17.80		
39	3.910	42	4.211	1.077		5.43	6.22	7.01	7.80	9.37	10.95	11.73	12.52	13.31	14.88	15.35	16.45	17.24		
25	2.506	27	2.707	1.080	3.46	5.35	6.93	7.72	8.51	10.08	11									







Table with columns for Center Distance (Inches), Sprocket Combinations (DriveR, DriveN), and Speed Ratio. Rows represent different belt sizes and configurations.

Note: 25, 27, 29, 31, 33, 35, 37, 39, 42, 46, 50 and 53 groove sprockets are only available as stock products in 20 and 30mm widths.

\* This length correction factor must be used to determine the proper belt width.

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.







Table with columns for Sprocket Combinations (DriveR, DriveN), Speed Ratio, and Center Distance, Inches (various P.L. and tooth counts). Rows represent different belt types and sizes.

Note: 25, 27, 29, 31, 33, 35, 37, 39, 42, 46, 50 and 53 groove sprockets are only available as stock products in 20 and 30mm widths.

\* This length correction factor must be used to determine the proper belt width.

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.









Table with columns for Center Distance (inches), Sprocket Combinations (DriveR/DriveN), Speed Ratio, and Length Factor. Rows represent different belt types and sizes, such as 1200-8MGT, 1224-8MGT, etc.

Note: 25, 27, 29, 31, 33, 35, 37, 39, 42, 46, 50 and 53 groove sprockets are only available as stock products in 20 and 30mm widths.

\* This length correction factor must be used to determine the proper belt width.

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.





Table with columns for Center Distance (Inches), Speed Ratio, DriveR (No. of Grooves), DriveN (No. of Grooves), and Sprocket Combinations. The table lists various belt sizes and their corresponding dimensions for different sprocket counts.

Note: 25, 27, 29, 31, 33, 35, 37, 39, 42, 46, 50 and 53 groove sprockets are only available as stock products in 20 and 30mm widths.

\* This length correction factor must be used to determine the proper belt width.

Teeth in Mesh Factor: 0.8

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.

























Sprocket Combinations				Speed Ratio	Center Distance, Inches									
DriveR		DriveN			966-14MGT P.L. 38.031 69 teeth	1190-14MGT P.L. 46.650 165 teeth	1400-14MGT P.L. 55.118 100 teeth	1610-14MGT P.L. 63.386 115 teeth	1778-14MGT P.L. 70.000 127 teeth	1890-14MGT P.L. 74.409 135 teeth	2100-14MGT P.L. 82.677 150 teeth	2310-14MGT P.L. 90.946 165 teeth	2490-14MGT P.L. 96.657 175 teeth	2590-14MGT P.L. 101.968 185 teeth
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)											
31	5.439	90	15.790	2.903				14.06	17.56	19.85	24.11	28.32	31.13	33.92
38	6.667	112	19.650	2.947										29.60
30	5.263	90	15.790	3.000				14.17	17.68	19.97	24.23	28.45	31.25	34.04
48	8.421	144	25.264	3.000									19.97	22.97
56	9.825	168	29.475	3.000										
64	11.229	192	33.686	3.000										
37	6.492	112	19.650	3.027						15.23	19.70	24.03	26.89	29.72
29	5.088	90	15.790	3.103						20.09	24.35	28.57	31.38	34.17
36	6.316	112	19.650	3.111						15.34	19.81	24.15	27.01	29.84
46	8.071	144	25.264	3.130								17.08	20.19	23.19
35	6.141	112	19.650	3.200						15.45	19.93	24.27	27.13	29.96
60	10.527	192	33.686	3.200										
28	4.912	90	15.790	3.214				14.40	17.91	20.21	24.47	28.69	31.50	34.29
52	9.123	168	29.475	3.231										
44	7.720	144	25.264	3.273								17.29	20.41	23.42
34	5.965	112	19.650	3.294						15.56	20.04	24.39	27.25	30.09
50	8.772	168	29.475	3.360										
33	5.790	112	19.650	3.394					13.15	15.66	20.16	24.50	27.37	30.21
42	7.369	144	25.264	3.429								17.50	20.63	23.64
56	9.825	192	33.686	3.429										
32	5.614	112	19.650	3.500					13.25	15.77	20.27	24.62	27.49	30.33
48	8.421	168	29.475	3.500										
40	7.018	144	25.264	3.600								17.71	20.85	23.86
31	5.439	112	19.650	3.613						13.36	15.88	20.38	24.74	30.45
46	8.071	168	29.475	3.652										
39	6.842	144	25.264	3.692								17.81	20.95	23.98
52	9.123	192	33.686	3.692										
30	5.263	112	19.650	3.733						13.46	15.99	20.50	24.85	30.57
38	6.667	144	25.264	3.789										
44	7.720	168	29.475	3.818								17.92	21.06	24.09
50	8.772	192	33.686	3.840										
29	5.088	112	19.650	3.862					13.57	16.10	20.61	24.97	27.84	30.69
37	6.492	144	25.264	3.892										
28	4.912	112	19.650	4.000					13.67	16.21	20.72	18.02	21.17	24.20
36	6.316	144	25.264	4.000								25.09	27.96	30.81
42	7.369	168	29.475	4.000								18.13	21.28	24.31
48	8.421	192	33.686	4.000										
35	6.141	144	25.264	4.114								18.23	21.39	24.42
46	8.071	192	33.686	4.174										
40	7.018	168	29.475	4.200										18.87
34	5.965	144	25.264	4.235								18.34	21.50	24.53
39	6.842	168	29.475	4.308										18.97
33	5.790	144	25.264	4.364								18.44	21.61	24.65
44	7.720	192	33.686	4.364										
38	6.667	168	29.475	4.421										19.08
32	5.614	144	25.264	4.500								18.55	21.72	24.76
37	6.492	168	29.475	4.541										19.18
42	7.369	192	33.686	4.571										
31	5.439	144	25.264	4.645								18.65	21.82	24.87
36	6.316	168	29.475	4.667										19.28
30	5.263	144	25.264	4.800								18.76	21.93	24.98
35	6.141	168	29.475	4.800										19.38
40	7.018	192	33.686	4.800										
39	6.842	192	33.686	4.923										
34	5.965	168	29.475	4.941										19.48
29	5.088	144	25.264	4.966								18.86	22.04	25.09
38	6.667	192	33.686	5.053										
33	5.790	168	29.475	5.091										19.58
28	4.912	144	25.264	5.143								18.97	22.15	25.20
37	6.492	192	33.686	5.189										
32	5.614	168	29.475	5.250										19.69
36	6.316	192	33.686	5.333										
31	5.439	168	29.475	5.419										19.79
35	6.141	192	33.686	5.486										
30	5.263	168	29.475	5.600										19.89
34	5.965	192	33.686	5.647										
29	5.088	168	29.475	5.793										19.99
33	5.790	192	33.686	5.818										
28	4.912	168	29.475	6.000										20.09
32	5.614	192	33.686	6.000										
31	5.439	192	33.686	6.194										
30	5.263	192	33.686	6.400										
29	5.088	192	33.686	6.621										
28	4.912	192	33.686	6.857										
Length Factor*					0.80	0.80	0.90	0.90	0.95	0.95	1.00	1.00	1.00	1.05

Note: 31, 33, 35, 37, 39, 42, 46 and 50 groove sprockets are only available as stock products in 40mm width.

\* This length correction factor must be used to determine the proper belt width.

Center distance is greater than eight times the small sprocket and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.









# 5M PowerGrip® GT®3 Power Rating Table – 25mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)																								
	18	19	20	21	22	23	24	25	26	28	30	32	34	36	38	40	44	46	48	50	52	56	60	64	68
10	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.16
20	0.05	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26
40	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.36	0.38	0.40	0.42	0.44	0.47	0.51	0.55	0.59
60	0.14	0.16	0.17	0.19	0.20	0.22	0.23	0.25	0.26	0.29	0.32	0.35	0.38	0.41	0.44	0.46	0.52	0.55	0.58	0.61	0.63	0.69	0.75	0.80	0.86
100	0.22	0.25	0.27	0.30	0.32	0.34	0.37	0.39	0.42	0.46	0.51	0.56	0.60	0.65	0.69	0.74	0.83	0.88	0.92	0.97	1.01	1.10	1.19	1.28	1.37
200	0.41	0.45	0.50	0.55	0.59	0.64	0.68	0.73	0.77	0.86	0.95	1.04	1.13	1.21	1.30	1.39	1.56	1.65	1.73	1.82	1.91	2.08	2.24	2.41	2.58
300	0.58	0.64	0.71	0.78	0.84	0.91	0.97	1.04	1.10	1.23	1.36	1.49	1.62	1.75	1.88	2.00	2.25	2.38	2.51	2.63	2.75	3.00	3.25	3.49	3.73
400	0.73	0.82	0.91	0.99	1.08	1.17	1.25	1.34	1.42	1.59	1.76	1.93	2.10	2.26	2.43	2.59	2.92	3.09	3.25	3.41	3.57	3.89	4.21	4.53	4.85
500	0.88	0.99	1.10	1.20	1.31	1.42	1.52	1.63	1.73	1.94	2.15	2.35	2.56	2.76	2.97	3.17	3.57	3.77	3.97	4.17	4.37	4.76	5.15	5.54	5.93
600	1.03	1.15	1.28	1.41	1.53	1.66	1.78	1.91	2.03	2.28	2.52	2.77	3.01	3.25	3.49	3.73	4.21	4.44	4.68	4.91	5.15	5.61	6.08	6.53	6.99
800	1.30	1.47	1.63	1.80	1.96	2.12	2.28	2.44	2.61	2.93	3.25	3.57	3.88	4.20	4.51	4.82	5.44	5.75	6.05	6.36	6.66	7.27	7.87	8.47	9.06
1000	1.56	1.76	1.96	2.17	2.37	2.57	2.77	2.96	3.16	3.56	3.95	4.34	4.72	5.11	5.49	5.87	6.63	7.01	7.39	7.76	8.13	8.87	9.61	10.34	11.07
1200	1.80	2.05	2.28	2.52	2.76	3.00	3.23	3.46	3.70	4.16	4.63	5.09	5.54	6.00	6.45	6.90	7.80	8.24	8.69	9.13	9.56	10.44	11.31	12.17	13.02
1400	2.04	2.32	2.59	2.87	3.14	3.41	3.68	3.95	4.22	4.76	5.29	5.82	6.35	6.87	7.39	7.91	8.94	9.45	9.96	10.46	10.97	11.97	12.97	13.95	14.93
1600	2.27	2.58	2.89	3.20	3.51	3.82	4.13	4.43	4.73	5.34	5.94	6.54	7.13	7.72	8.31	8.89	10.05	10.63	11.20	11.77	12.34	13.47	14.59	15.70	16.81
1800	2.49	2.84	3.18	3.53	3.87	4.21	4.56	4.89	5.23	5.90	6.58	7.24	7.90	8.56	9.21	9.86	11.15	11.79	12.43	13.06	13.69	14.94	16.19	17.42	18.65
2000	2.70	3.09	3.46	3.85	4.23	4.60	4.98	5.35	5.72	6.46	7.20	7.93	8.65	9.38	10.09	10.81	12.22	12.93	13.63	14.32	15.01	16.39	17.76	19.11	20.45
2400	3.11	3.56	4.01	4.46	4.91	5.35	5.79	6.23	6.67	7.54	8.41	9.27	10.13	10.98	11.82	12.66	14.33	15.15	15.98	16.79	17.60	19.22	20.82	22.39	23.96
2800	3.50	4.02	4.53	5.05	5.57	6.07	6.58	7.08	7.59	8.59	9.59	10.58	11.56	12.54	13.50	14.46	16.37	17.31	18.25	19.19	20.11	21.95	23.77	25.57	27.35
3200	3.87	4.46	5.03	5.62	6.20	6.77	7.35	7.91	8.48	9.61	10.74	11.85	12.95	14.05	15.13	16.21	18.35	19.41	20.47	21.51	22.55	24.61	26.64	28.64	30.62
3600	4.22	4.88	5.52	6.17	6.81	7.45	8.09	8.71	9.35	10.60	11.85	13.08	14.30	15.52	16.72	17.92	20.28	21.45	22.62	23.77	24.91	27.18	29.41	31.60	33.77
4000	4.56	5.28	5.99	6.70	7.41	8.10	8.81	9.50	10.19	11.57	12.94	14.28	15.62	16.96	18.27	19.58	22.16	23.44	24.71	25.96	27.20	29.67	32.09	34.46	36.80
5000	5.35	6.23	7.09	7.96	8.82	9.67	10.53	11.36	12.21	13.88	15.54	17.17	18.78	20.40	21.98	23.55	26.64	28.16	29.68	31.16	32.63	35.54	38.37	41.13	43.82
6000	6.07	7.10	8.11	9.13	10.14	11.14	12.14	13.12	14.11	16.05	17.99	19.88	21.76	23.62	25.45	27.26	30.81	32.55	34.27	35.96	37.62	40.88	44.03	47.07	
8000	7.32	8.64	9.93	11.24	12.53	13.79	15.07	16.31	17.56	20.01	22.45	24.82	27.14	29.45	31.69	33.89	38.89	40.23	42.26						
10000	8.34	9.94	11.49	13.06	14.60	16.11	17.62	19.10	20.58	23.47	26.32	29.07	31.76	34.39	36.93										
12000	9.16	11.00	12.79	14.59	16.36	18.08	19.81	21.48	23.15	26.40	29.57	32.61													
14000	9.77	11.83	13.83	15.83	17.80	19.70	21.60	23.43	25.25	28.76															

Corrected Horsepower Rating = [Base Rating] x [Belt Length Correction Factor]

### 5MGT Belt Length Correction Factor

Pitch/Length Designation	No. of Teeth	Correction Factor	Pitch/Length Designation	No. of Teeth	Correction Factor
5MR-300	60	0.77	5MR-700	140	1.00
5MR-355	71	0.81	5MR-750	150	1.01
5MR-375	75	0.83	5MR-800	160	1.03
5MR-400	80	0.84	5MR-815	163	1.04
5MR-405	81	0.85	5MR-850	170	1.05
5MR-425	85	0.86	5MR-900	180	1.06
5MR-450	90	0.88	5MR-1000	200	1.09
5MR-500	100	0.90	5MR-1150	230	1.13
5MR-535	107	0.92	5MR-1300	260	1.16
5MR-565	113	0.94	5MR-1450	290	1.19
5MR-575	115	0.94	5MR-1600	320	1.22
5MR-580	116	0.95	5MR-1720	344	1.24
5MR-600	120	0.95	5MR-1755	351	1.25
5MR-625	125	0.97	5MR-2100	420	1.29
5MR-650	130	0.98			





# 8M PowerGrip® GT®3 Power Rating Table – 85mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)																
	34 3.409	35 3.509	36 3.609	37 3.709	38 3.810	39 3.910	40 4.010	42 4.211	44 4.411	46 4.612	48 4.812	50 5.013	53 5.314	56 5.614	64 6.416	72 7.218	80 8.020
10	0.70	0.72	0.75	0.78	0.80	0.83	0.85	0.91	0.96	1.01	1.06	1.11	1.19	1.27	1.47	1.67	1.88
20	1.34	1.39	1.44	1.49	1.54	1.59	1.64	1.74	1.84	1.94	2.04	2.14	2.29	2.44	2.84	3.23	3.62
40	2.57	2.67	2.76	2.86	2.96	3.06	3.16	3.35	3.54	3.74	3.93	4.12	4.41	4.70	5.46	6.22	6.98
60	3.75	3.90	4.04	4.19	4.33	4.47	4.62	4.90	5.19	5.47	5.76	6.04	6.46	6.89	8.01	9.12	10.2
100	6.05	6.29	6.52	6.75	6.99	7.22	7.45	7.92	8.38	8.84	9.30	9.76	10.5	11.1	13.0	14.8	16.6
200	11.5	12.0	12.4	12.9	13.3	13.8	14.2	15.1	16.0	16.9	17.8	18.7	20.0	21.4	24.9	28.3	31.8
300	16.8	17.5	18.1	18.8	19.5	20.1	20.8	22.1	23.4	24.7	26.0	27.3	29.3	31.2	36.4	41.5	46.6
400	22.0	22.8	23.7	24.6	25.4	26.3	27.2	28.9	30.6	32.3	34.0	35.7	38.3	40.8	47.6	54.3	61.0
500	27.0	28.1	29.1	30.2	31.3	32.4	33.4	35.5	37.7	39.8	41.9	44.0	47.2	50.3	58.6	66.9	75.1
600	31.9	33.2	34.5	35.8	37.0	38.3	39.6	42.1	44.6	47.1	49.6	52.1	55.9	59.6	69.5	79.3	89.0
700	36.8	38.3	39.8	41.2	42.7	44.2	45.7	48.6	51.5	54.4	57.3	60.2	64.5	68.8	80.2	91.5	102.8
800	41.7	43.3	45.0	46.7	48.3	50.0	51.7	55.0	58.3	61.6	64.8	68.1	73.0	77.9	90.8	103.6	116.4
870	45.0	46.8	48.6	50.4	52.2	54.0	55.8	59.4	63.0	66.5	70.1	73.6	78.9	84.2	98.2	112.0	125.8
1000	51.1	53.2	55.3	57.3	59.4	61.4	63.5	67.6	71.6	75.7	79.7	83.8	89.8	95.8	111.7	127.5	143.1
1160	58.6	61.0	63.3	65.7	68.1	70.4	72.8	77.5	82.1	86.8	91.4	96.1	103.0	109.9	128.1	146.2	164.0
1200	60.5	62.9	65.3	67.8	70.2	72.7	75.1	79.9	84.7	89.6	94.3	99.1	106.3	113.4	132.2	150.8	169.2
1400	69.6	72.4	75.3	78.1	80.9	83.7	86.5	92.1	97.6	103.2	108.7	114.2	122.5	130.7	152.3	173.7	194.8
1600	78.6	81.8	85.0	88.2	91.4	94.6	97.8	104.1	110.4	116.6	122.9	129.1	138.4	147.7	172.1	196.2	220.0
1750	85.3	88.8	92.3	95.7	99.2	102.7	106.1	113.0	119.8	126.6	133.4	140.1	150.2	160.2	186.7	212.8	238.5
2000	96.3	100.3	104.2	108.1	112.0	115.9	119.8	127.6	135.3	143.0	150.6	158.2	169.6	180.9	210.7	239.9	268.6
2400	113.6	118.3	122.9	127.5	132.1	136.7	141.3	150.4	159.5	168.6	177.6	186.5	199.9	213.1	247.9	281.9	315.2
2560	120.4	125.3	130.2	135.1	140.0	144.9	149.8	159.4	169.1	178.6	188.2	197.6	211.7	225.7	262.4	298.3	333.2
3200	147.0	153.0	159.0	165.0	170.9	176.8	182.7	194.5	206.2	217.8	229.3	240.7	257.7	274.5	318.3	360.6	
3450	157.1	163.5	169.9	176.3	182.6	189.0	195.3	207.8	220.3	232.6	244.9	257.0	275.0	292.8	339.1		
4000	178.8	186.1	193.4	200.6	207.8	215.0	222.1	236.3	250.3	264.2	278.0	291.6	311.7	331.5			
4500	198.0	206.0	214.1	222.0	229.9	237.8	245.7	261.2	276.6	291.7	306.7	321.5	343.4				
5000	216.6	225.3	234.0	242.7	251.3	259.8	268.3	285.1	301.7	318.1	334.1						
5500	234.5	243.9	253.3	262.6	271.8	281.0	290.1	308.0	325.7								

Corrected Horsepower Rating = [Base Rating] x [Belt Length Correction Factor]

### 8MGT Belt Length Correction Factor

Pitch/Length Designation	No. of Teeth	Correction Factor	Pitch/Length Designation	No. of Teeth	Correction Factor
384-8MGT	48	0.70	1280-8MGT	160	1.10
480-8MGT	60	0.80	1224-8MGT	153	1.00
560-8MGT	70	0.80	1440-8MGT	180	1.10
576-8MGT	72	0.80	1512-8MGT	189	1.10
600-8MGT	75	0.80	1584-8MGT	198	1.10
640-8MGT	80	0.90	1600-8MGT	200	1.10
720-8MGT	90	0.90	1760-8MGT	220	1.10
800-8MGT	100	0.90	1800-8MGT	225	1.20
840-8MGT	105	0.90	2000-8MGT	250	1.20
880-8MGT	110	0.90	2200-8MGT	275	1.20
920-8MGT	115	1.00	2400-8MGT	300	1.20
960-8MGT	120	1.00	2600-8MGT	325	1.20
1040-8MGT	130	1.00	2800-8MGT	350	1.20
1064-8MGT	133	1.00	3048-8MGT	381	1.20
1104-8MGT	138	1.00	3280-8MGT	410	1.20
1120-8MGT	140	1.00	3600-8MGT	450	1.20
1160-8MGT	145	1.00	4400-8MGT	550	1.20
1200-8MGT	150	1.00			







# 14M PowerGrip® GT®3 Power Rating Table – 170mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)											
	36 6.316	38 6.667	40 7.018	44 7.720	48 8.421	52 9.123	56 9.825	60 10.527	64 11.229	68 11.930	72 12.632	80 14.036
10	4.34	4.61	4.87	5.41	5.93	6.46	6.98	7.50	8.02	8.53	9.04	10.1
20	8.17	8.68	9.19	10.2	11.2	12.2	13.2	14.2	15.1	16.1	17.1	19.0
40	15.3	16.3	17.3	19.2	21.1	22.9	24.8	26.6	28.5	30.3	32.1	35.8
60	22.1	23.5	24.9	27.7	30.4	33.1	35.8	38.5	41.2	43.8	46.4	51.7
100	35.0	37.2	39.4	43.8	48.2	52.5	56.8	61.1	65.3	69.5	73.7	82.0
200	65.0	69.1	73.3	81.5	89.6	97.7	105.7	113.7	121.6	129.4	137.2	152.7
300	93.0	99.0	105.0	116.8	128.5	140.1	151.7	163.1	174.4	185.7	196.9	219.1
400	119.8	127.6	135.3	150.6	165.7	180.7	195.6	210.3	225.0	239.5	253.9	282.4
500	145.7	155.1	164.5	183.2	201.6	219.9	238.0	255.9	273.7	291.3	308.8	343.4
600	170.7	181.8	192.9	214.8	236.5	257.9	279.1	300.1	320.9	341.6	362.0	402.4
800	219.0	233.3	247.5	275.7	303.5	331.0	358.1	385.0	411.6	437.9	463.9	515.1
870	235.4	250.8	266.1	296.4	326.2	355.7	384.9	413.7	442.2	470.4	498.2	553.0
1000	265.2	282.6	299.8	333.9	367.6	400.7	433.5	465.8	497.7	529.2	560.3	621.2
1160	300.9	320.7	340.2	378.9	416.9	454.4	491.3	527.7	563.5	598.8	633.6	701.6
+1200	309.7	330.0	350.1	389.9	429.0	467.5	505.5	542.8	579.6	615.8	651.4	721.0
+1400	352.6	375.7	398.6	443.7	488.0	531.5	574.3	616.3	657.5	697.9	737.5	814.4
+1600	394.1	419.9	445.4	495.5	544.7	592.9	640.0	686.1	731.2	775.3	818.3	901.1
+1750	424.3	452.0	479.4	533.2	585.7	637.1	687.3	736.2	783.9	830.3	875.4	961.6
+1800	434.2	462.5	490.5	545.5	599.1	651.5	702.6	752.4	800.9	848.0	893.7	
+2000	473.1	503.7	534.0	593.4	651.3	707.5	762.1	815.0	866.2	915.7		
+2400	546.8	581.9	616.4	683.6	748.6	811.1	871.1					
+2800	615.4	654.3	692.3	765.9	836.2							
+3200	678.8	720.7	761.6	839.9								
+3600	736.7	781.0										
+4000												

+ Drives within this speed range may generate an objectionable noise level. This can be reduced by using commercially available acoustical damping material in the belt guard. Contact Gates for recommendations on any drive to be installed in a noise sensitive area.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Length Correction Factor}]$$

### 14MGT Belt Length Correction Factor

Pitch/Length Designation	No. of Teeth	Correction Factor	Pitch/Length Designation	No. of Teeth	Correction Factor
966-14MGT	69	0.80	3150-14MGT	225	1.05
1190-14MGT	85	0.80	3360-14MGT	240	1.10
1400-14MGT	100	0.90	3500-14MGT	250	1.10
1610-14MGT	115	0.90	3850-14MGT	275	1.10
1778-14MGT	127	0.95	4326-14MGT	309	1.10
1890-14MGT	135	0.95	4578-14MGT	327	1.10
2100-14MGT	150	1.00	4956-14MGT	354	1.10
2310-14MGT	165	1.00	5320-14MGT	380	1.10
2450-14MGT	175	1.00	5740-14MGT	410	1.10
2590-14MGT	185	1.05	6160-14MGT	440	1.10
2800-14MGT	200	1.05	6860-14MGT	490	1.10









# 20mm Pitch PowerGrip® HTD® Belts Drive Selection Table

Sprocket Combinations			Center Distance, Inches																
			2000-20M P.L. 78.740 100 teeth	2500-20M P.L. 98.425 125 teeth	3400-20M P.L. 133.858 170 teeth	3800-20M P.L. 149.808 190 teeth	4200-20M P.L. 166.354 210 teeth	4600-20M P.L. 181.102 230 teeth	5000-20M P.L. 198.850 250 teeth	5200-20M P.L. 204.224 260 teeth	5400-20M P.L. 212.598 270 teeth	5600-20M P.L. 220.472 280 teeth	5800-20M P.L. 228.346 290 teeth	6000-20M P.L. 236.220 300 teeth	6200-20M P.L. 244.094 310 teeth	6400-20M P.L. 251.968 320 teeth	6600-20M P.L. 259.843 330 teeth		
DriveR	Pitch Diameter (Inches)	Speed Ratio	DriveN																
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)																
52	13.033	90	22.557	1.731	20.71	38.88	46.61	54.52	62.42	70.31	78.20	86.09	93.97	101.86					
64	16.041	112	28.071	1.750	30.53	31.71	39.70	47.65	55.58	63.49	71.40	79.30	87.19	95.09					
34	8.522	60	15.038	1.765	20.61	48.32	56.20	64.09	71.97	79.85	87.73	95.61	103.49	111.37					
36	9.023	64	16.041	1.778	19.37	47.11	55.01	62.89	70.78	78.66	86.54	94.42	102.30	110.18					
38	9.524	68	17.043	1.789	18.11	45.91	53.81	61.70	69.58	77.47	85.35	93.23	101.11	108.99					
40	10.025	72	18.046	1.800	16.84	44.70	52.60	60.50	68.39	76.27	84.16	92.04	99.92	107.80					
80	20.051	144	36.092	1.800		29.62	37.73	45.75	53.73	61.68	69.62	77.54	85.45	93.36					
44	11.028	80	20.051	1.818	24.38	42.28	50.19	58.09	65.99	73.88	81.77	89.65	97.53	105.42					
60	15.038	112	28.071	1.867		32.41	40.42	48.38	56.32	64.24	72.15	80.05	87.95	95.84					
90	22.557	168	42.107	1.867			47.34	55.26	63.17	71.06	78.96	86.85	94.74	102.62					
48	12.031	90	22.557	1.872	21.40	39.41	47.34	55.26	63.17	71.06	78.96	86.85	94.74	102.62					
34	8.522	64	16.041	1.885	19.72	29.68	37.58	45.48	53.37	61.26	69.15	77.04	84.93	92.82					
36	9.023	68	17.043	1.889	18.46	28.46	36.35	44.24	52.13	60.02	67.91	75.80	83.69	91.58					
38	9.524	72	18.046	1.895	17.19	27.22	35.11	42.99	50.88	58.77	66.66	74.55	82.44	90.33					
34	8.522	68	17.043	2.000	18.81	28.82	36.71	44.60	52.49	60.38	68.27	76.16	84.05	91.94					
36	9.023	72	18.046	2.000	17.53	27.58	35.47	43.36	51.25	59.14	67.03	74.92	82.81	90.70					
40	10.025	80	20.051	2.000	25.09	43.01	50.93	58.84	66.74	74.63	82.53	90.42	98.31	106.20					
56	14.036	112	28.071	2.000		33.11	41.13	49.10	57.05	65.02	72.98	80.93	88.88	96.83					
72	18.046	144	36.092	2.000			30.96	39.11	47.17	55.17	63.13	71.08	79.05	87.01					
44	11.028	90	22.557	2.045	22.08		48.08	56.00	63.91	71.82	79.71	87.61	95.50	103.38					
80	20.051	168	42.107	2.100			51.30	59.21	67.12	75.01	82.90	90.79	98.68	106.56					
38	9.524	80	20.051	2.105	25.44	43.38	51.30	59.21	67.12	75.01	82.90	90.79	98.68	106.56					
34	8.522	72	18.046	2.118	27.94	45.81	53.73	61.63	69.52	77.41	85.30	93.18	101.07	108.95					
68	17.043	144	36.092	2.118			31.63	39.80	47.87	55.88	63.86	71.81	79.75	87.67					
90	22.557	192	48.122	2.133						40.90	48.91	56.82	64.73	72.63					
52	13.033	112	28.071	2.154			33.81	41.84	49.83	57.78	65.71	73.63	81.54	89.45					
36	9.023	80	20.051	2.222	25.79	43.75	51.67	59.59	67.49	75.39	83.28	91.17	99.06	106.94					
40	10.025	90	22.557	2.250	22.75	40.86	48.81	56.74	64.66	72.56	80.47	88.36	96.25	104.14					
64	16.041	144	36.092	2.250			32.29	40.48	48.57	56.59	64.57	72.53	80.48	88.44					
48	12.031	112	28.071	2.333	34.50	42.55	50.54	58.50	66.44	74.37	82.29	90.19	98.15	106.10					
72	18.046	168	42.107	2.333			33.23	41.55	49.72	57.80	65.83	73.82	81.79	89.75					
34	8.522	80	20.051	2.353	26.13	44.11	52.04	59.96	67.86	75.76	83.66	91.55	99.44	107.33					
38	9.524	90	22.557	2.368	23.09	41.22	49.17	57.11	65.03	72.94	80.84	88.74	96.63	104.52					
60	15.038	144	36.092	2.400			32.95	40.96	48.92	56.83	64.73	72.63	80.53	88.43					
80	20.051	192	48.122	2.400						42.55	50.45	58.35	66.25	74.15					
90	22.557	216	54.138	2.400															
68	17.043	168	42.107	2.471	23.43	41.57	49.54	57.48	65.40	73.31	81.21	89.11	97.00	104.90					
36	9.023	90	22.557	2.500			35.18	43.25	51.26	59.23	67.18	75.11	83.03	90.94					
44	11.028	112	28.071	2.545			33.61	41.84	49.96	58.00	66.01	74.00	81.93	89.85					
56	14.036	144	36.092	2.571						51.08	59.19	67.24	75.25	83.23					
64	16.041	168	42.107	2.625	23.76	41.93	49.90	57.84	65.77	73.68	81.59	89.49	97.38	105.28					
34	8.522	90	22.557	2.647						48.02	56.25	64.38	72.45	80.52					
72	18.046	192	48.122	2.667															
80	20.051	216	54.138	2.700															
			Length Factor*		0.80	0.85	0.95	1.0	1.05	1.1									

\*This length correction factor must be used to determine the proper belt width.

Center Distance is greater than eight times the small diameter and the large sprocket is not flanged. See Engineering Section I-10. Use of Flanged Sprockets, on page 173.



# 20mm Pitch PowerGrip® HTD® Belts Drive Selection Table

Sprocket Combinations		Center Distance, Inches														
		2000-20M P.L. 78.740 100 teeth	2500-20M P.L. 98.425 125 teeth	3400-20M P.L. 133.858 170 teeth	3800-20M P.L. 149.606 190 teeth	4200-20M P.L. 166.354 210 teeth	4600-20M P.L. 181.102 230 teeth	5000-20M P.L. 196.850 250 teeth	5200-20M P.L. 204.724 260 teeth	5400-20M P.L. 212.598 270 teeth	5600-20M P.L. 220.472 280 teeth	5800-20M P.L. 228.346 290 teeth	6000-20M P.L. 236.220 300 teeth	6200-20M P.L. 244.094 310 teeth	6400-20M P.L. 251.968 320 teeth	6600-20M P.L. 259.843 330 teeth
Driver	Driven															
No. of Grooves	Pitch Diameter (Inches)	No. of Grooves	Pitch Diameter (Inches)	Speed Ratio												
52	13.033	144	36.092	2.769												
40	10.025	112	28.071	2.800												
60	15.038	168	42.107	2.800												
68	17.043	192	48.122	2.824												
38	9.524	112	28.071	2.947												
48	12.031	144	36.092	3.000												
56	14.036	168	42.107	3.000												
64	16.041	192	48.122	3.000												
72	18.046	216	54.138	3.000												
36	9.023	112	28.071	3.111												
68	17.043	216	54.138	3.176												
60	15.038	192	48.122	3.200												
52	13.033	168	42.107	3.231												
44	11.028	144	36.092	3.273												
34	8.522	112	28.071	3.294												
64	16.041	216	54.138	3.375												
56	14.036	192	48.122	3.429												
48	12.031	168	42.107	3.500												
40	10.025	144	36.092	3.600												
60	15.038	216	54.138	3.600												
52	13.033	192	48.122	3.692												
38	9.524	144	36.092	3.789												
44	11.028	168	42.107	3.818												
56	14.036	216	54.138	3.857												
36	9.023	144	36.092	4.000												
48	12.031	192	48.122	4.000												
52	13.033	216	54.138	4.154												
40	10.025	168	42.107	4.200												
34	8.522	144	36.092	4.235												
44	11.028	192	48.122	4.364												
38	9.524	168	42.107	4.421												
48	12.031	216	54.138	4.500												
36	9.023	168	42.107	4.667												
40	10.025	192	48.122	4.800												
44	11.028	216	54.138	4.909												
34	8.522	168	42.107	4.941												
38	9.524	192	48.122	5.053												
36	9.023	192	48.122	5.333												
40	10.025	216	54.138	5.400												
34	8.522	192	48.122	5.647												
38	9.524	216	54.138	5.684												
36	9.023	216	54.138	6.000												
34	8.522	216	54.138	6.353												
Length		Factor*		0.80	0.85	0.95	1.0	1.05	1.1							

\*This length correction factor must be used to determine the proper belt width.

Center Distance is greater than eight times the small diameter and the large sprocket is not flanged. See Engineering Section I-10, Use of Flanged Sprockets, on page 173.



# 20M PowerGrip® HTD® Power Rating Table — 115mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)													
	34 8.522	36 9.023	38 9.524	40 10.026	44 11.028	48 12.031	52 13.033	56 14.036	60 15.038	64 16.041	68 17.043	72 18.046	80 20.051	90 22.557
10	3.1	3.3	3.5	3.8	4.2	4.6	4.9	5.3	5.6	5.9	6.2	6.5	7.1	7.7
20	6.2	6.6	7.1	7.5	8.3	9.1	9.9	10.6	11.2	11.8	12.4	13.0	14.1	15.5
30	9.3	9.9	10.6	11.3	12.5	13.7	14.8	15.9	16.8	17.7	18.6	19.5	21.2	23.2
40	12.4	13.2	14.1	15.0	16.7	18.2	19.7	21.2	22.5	23.6	24.8	26.0	28.2	30.9
50	15.4	16.6	17.7	18.8	20.8	22.8	24.6	26.5	28.1	29.6	31.0	32.4	35.3	38.7
60	18.5	19.9	21.2	22.5	25.0	27.3	29.6	31.8	33.7	35.5	37.2	38.9	42.3	46.4
80	24.7	26.5	28.3	30.0	33.4	36.4	39.4	42.5	44.9	47.3	49.6	51.9	56.4	61.8
100	30.9	33.1	35.3	37.5	41.7	45.5	49.3	53.1	56.1	59.1	62.0	64.8	70.4	77.2
150	46.3	49.7	53.0	56.2	62.5	68.2	73.9	79.5	84.1	88.5	92.9	97.1	105.5	115.6
200	61.7	66.2	70.6	74.9	83.3	90.9	98.4	105.9	112.0	117.9	123.6	129.3	140.4	153.7
300	89.5	95.7	102.1	108.5	121.8	135.4	144.3	152.9	161.3	169.6	177.7	185.6	201.0	219.3
400	112.7	120.5	128.3	136.3	152.7	169.5	180.4	190.8	201.0	210.9	220.6	230.0	248.1	269.4
500	134.4	143.5	152.7	162.1	181.3	200.9	213.4	225.4	236.9	248.1	259.0	269.4	289.3	312.1
600	154.7	165.0	175.5	186.1	207.8	229.9	243.8	256.9	269.5	281.6	293.1	304.2	324.8	347.7
730	179.3	191.1	203.0	215.0	239.5	264.4	279.5	293.6	307.0	319.6	331.5	342.6	362.5	383.0
800	191.8	204.3	216.8	229.5	255.4	281.5	297.0	311.4	324.9	337.5	349.2	360.0	378.7	396.6
870	203.8	216.9	230.1	243.4	270.4	297.5	313.4	327.9	341.3	353.7	365.0	375.1	391.9	406.3
970	220.1	234.0	248.0	262.0	290.4	318.8	334.7	349.0	362.0	373.6	383.8	392.5	405.4	
1170	249.9	265.0	280.1	295.2	325.4	352.2	370.2	382.8	393.3	401.7	407.8	411.7	412.1	
+1200	254.0	269.3	284.5	299.7	330.1	359.9	374.6	386.8	396.8	404.5	409.8	412.6	410.6	
+1460	286.2	302.2	318.0	333.6	363.9	392.9	403.4	410.1	413.1	412.3	407.6			
+1600	300.9	316.8	332.5	347.8	377.1	404.3	411.3	413.3	410.8					
+1750	314.4	330.1	345.2	359.8	387.1	411.4	413.3	409.2						
+2000	331.8	346.1	359.5	372.0	393.8	410.6								

# 20M PowerGrip® HTD® Power Rating Table — 170mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)													
	34 8.522	36 9.023	38 9.524	40 10.026	44 11.028	48 12.031	52 13.033	56 14.036	60 15.038	64 16.041	68 17.043	72 18.046	80 20.051	90 22.557
10	4.8	5.1	5.5	5.8	6.5	7.1	7.7	8.2	8.7	9.2	9.6	10.1	11.0	12.0
20	9.6	10.3	11.0	11.7	13.0	14.1	15.3	16.5	17.4	18.4	19.3	20.2	21.9	24.0
30	14.4	15.4	16.5	17.5	19.4	21.2	23.0	24.7	26.2	27.5	28.9	30.2	32.9	36.0
40	19.2	20.6	21.9	23.3	25.9	28.3	30.6	33.0	34.9	36.7	38.5	40.3	43.8	48.0
50	24.0	25.7	27.4	29.1	32.4	35.3	38.3	41.2	43.6	45.9	48.2	50.4	54.7	60.0
60	28.8	30.9	32.9	34.9	38.9	42.4	45.9	49.4	52.3	55.1	57.8	60.5	65.7	72.0
80	38.4	41.1	43.9	46.6	51.8	56.5	61.2	65.9	69.7	73.4	77.0	80.6	87.6	96.0
100	48.0	51.4	54.9	58.2	64.7	70.6	76.5	82.4	87.1	91.7	96.3	100.7	109.4	119.9
150	71.9	77.1	82.2	87.3	97.1	105.9	114.7	123.5	130.6	137.5	144.2	150.9	163.9	179.6
200	95.9	102.8	109.6	116.4	129.3	141.1	152.8	164.5	173.9	183.1	192.0	200.8	218.0	238.8
300	139.1	148.7	158.5	168.5	189.1	210.3	224.1	237.5	250.6	263.4	276.0	288.3	312.2	340.9
400	175.1	187.1	199.3	211.7	237.2	263.3	280.2	296.5	312.3	327.8	342.8	357.5	385.7	418.9
500	208.7	222.8	237.2	251.8	281.6	312.2	331.6	350.3	368.3	385.7	402.6	419.0	450.1	485.9
600	240.3	256.3	272.6	289.2	322.9	357.4	378.9	399.4	419.1	438.0	456.1	473.4	505.8	542.0
730	278.6	296.9	315.4	334.2	372.3	411.1	434.7	456.8	477.7	497.6	516.3	533.8	565.5	598.4
800	298.1	317.5	337.1	356.9	397.1	437.8	462.1	484.7	506.0	525.9	544.4	561.5	591.4	620.6
870	316.9	337.2	357.8	378.5	420.6	463.0	487.8	510.6	531.8	551.4	569.4	586.6	612.9	637.0
970	342.3	363.9	385.7	407.6	451.9	496.3	521.4	544.1	564.7	583.2	599.6	613.8	635.5	
1170	388.8	412.4	436.1	459.7	507.0	553.8	577.7	598.0	615.2	629.1	639.7	646.9	650.4	
+1200	395.3	419.1	443.0	466.8	514.4	561.3	584.8	604.6	620.9	633.9	643.3	649.0	648.9	
+1460	446.0	471.1	496.0	520.5	568.5	614.4	632.0	643.7	650.0	650.7	645.4			
+1600	469.3	494.5	519.2	543.4	590.1	633.6	646.0	651.0	649.2					
+1750	490.9	515.7	539.8	563.1	607.0	646.4	651.4	647.3						
+2000	519.2	542.2	563.9	584.2	620.2	648.8								

Shaded area indicates drive conditions where reduced service life can be expected.

+ Drives within this speed range may generate an objectionable noise level. This can be reduced by using commercially available acoustical damping material in the belt guard. Contact Gates for recommendations on any drive to be installed in a noise sensitive area.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Length Correction Factor}]$$



## 20M PowerGrip® HTD® Power Rating Table – 230mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)											
	38 9.524	40 10.026	44 11.028	48 12.031	52 13.033	56 14.036	60 15.038	64 16.041	68 17.043	72 18.046	80 20.051	90 22.557
10	7.6	8.1	9.0	9.8	10.6	11.4	12.1	12.7	13.4	14.0	15.2	16.7
20	15.2	16.2	18.0	19.6	21.3	22.9	24.2	25.5	26.7	28.0	30.4	33.4
30	22.9	24.3	27.0	29.4	31.9	34.3	36.3	38.2	40.1	42.0	45.6	50.0
40	30.5	32.3	36.0	39.2	42.5	45.8	48.4	51.0	53.5	56.0	60.8	66.7
50	38.1	40.4	45.0	49.1	53.1	57.2	60.5	63.7	66.9	70.0	76.0	83.4
60	45.7	48.5	53.9	58.9	63.8	68.7	72.6	76.5	80.2	83.9	91.2	100.0
80	60.9	64.7	71.9	78.5	85.0	91.5	96.8	101.9	106.9	111.9	121.6	133.3
100	76.2	80.9	89.9	98.1	106.2	114.4	121.0	127.4	133.6	139.8	151.9	166.5
150	114.2	121.2	134.8	147.1	159.3	171.5	181.3	190.9	200.3	209.5	227.5	249.3
200	152.2	161.6	179.6	195.9	212.2	228.4	241.5	254.2	266.6	278.9	302.8	331.6
300	220.1	234.0	262.6	291.9	317.2	329.8	348.0	365.8	383.3	400.4	433.6	473.4
400	276.7	294.0	329.4	365.7	389.1	411.7	433.7	455.2	476.1	496.5	535.8	582.0
500	329.4	349.6	391.1	433.6	460.6	486.5	511.6	535.8	559.4	582.1	625.4	675.4
600	378.6	401.6	448.5	496.4	526.4	554.8	582.2	608.6	633.8	658.0	703.3	753.9
730	438.1	464.2	517.3	571.1	604.0	634.8	664.1	691.8	717.9	742.5	786.9	833.3
800	468.2	495.8	551.7	608.3	642.3	673.8	703.5	731.3	757.2	781.3	823.5	865.0
870	497.0	525.9	584.4	643.4	678.1	710.0	739.7	767.2	792.4	815.3	854.0	888.7
970	536.0	566.5	628.1	690.0	725.1	756.8	785.7	811.8	835.0	855.3	886.5	910.3
+1170	606.2	639.2	705.2	770.5	804.1	832.8	857.2	877.2	892.7	903.4	910.3	
+1200	615.9	649.1	715.5	781.1	814.2	842.1	865.4	884.1	898.0	906.8	908.9	
+1460	690.1	724.4	791.7	856.2	881.4	898.6	908.5	910.7	904.9			
+1600	722.8	756.8	822.4	883.7	902.0	910.3	909.3					
+1750	752.1	784.8	846.8	902.7	911.1	907.2						
+2000	786.8	815.7	867.2	908.7								

## 20M PowerGrip® HTD® Power Rating Table – 290mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)							
	52 13.033	56 14.036	60 15.038	64 16.041	68 17.043	72 18.046	80 20.051	90 22.557
10	13.6	14.6	15.5	16.3	17.1	17.9	19.5	21.3
20	27.2	29.3	31.0	32.6	34.2	35.8	38.9	42.7
30	40.8	43.9	46.5	48.9	51.3	53.7	58.4	64.0
40	54.4	58.6	62.0	65.2	68.5	71.6	77.8	85.4
50	68.0	73.2	77.5	81.5	85.6	89.5	97.3	106.7
60	81.6	87.9	92.9	97.8	102.7	107.4	116.7	128.0
80	108.8	117.1	123.9	130.4	136.9	143.2	155.6	170.6
100	136.0	146.4	154.8	163.0	171.0	178.9	194.4	213.1
150	203.8	219.4	232.1	244.3	256.3	268.1	291.2	319.1
200	271.6	292.3	309.1	325.3	341.2	356.9	387.5	424.4
300	398.2	422.1	445.4	468.2	490.6	512.5	555.0	606.0
400	498.1	527.0	555.2	582.6	609.4	635.6	685.8	745.2
500	589.6	622.7	654.8	686.0	716.1	745.3	800.8	864.9
600	673.8	710.3	745.4	779.2	811.6	842.6	900.7	965.8
730	773.3	812.8	850.4	885.9	919.5	951.1	1008.3	1068.3
800	822.4	862.9	901.0	936.7	970.1	1001.1	1055.6	1109.4
870	868.4	909.4	947.5	982.9	1015.3	1044.9	1095.1	1140.4
+970	928.8	969.6	1006.8	1040.5	1070.5	1096.7	1137.6	
+1170	1030.5	1067.5	1099.2	1125.3	1145.6	1160.0	1170.3	
+1200	1043.5	1079.6	1110.0	1134.4	1152.7	1164.7	1168.8	
+1460	1130.8	1153.6	1167.0	1170.7	1164.3			
+1600	1158.0	1169.6	1169.4					
+1750	1170.9	1167.0						

Shaded area indicates drive conditions where reduced service life can be expected.

+ Drives within this speed range may generate an objectionable noise level. This can be reduced by using commercially available acoustical damping material in the belt guard. Contact Gates for recommendations on any drive to be installed in a noise sensitive area.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Length Correction Factor}]$$

### 20M Belt Length Correction Factor

Pitch/Length Designation	No. of Teeth	Correction Factor	Pitch/Length Designation	No. of Teeth	Correction Factor
2000-20M	100	0.80	5400-20M	270	1.05
2500-20M	125	0.85	5600-20M	280	1.05
3400-20M	170	0.95	5800-20M	290	1.10
3800-20M	190	1.00	6000-20M	300	1.10
4200-20M	210	1.00	6200-20M	310	1.10
4600-20M	230	1.00	6400-20M	320	1.10
5000-20M	250	1.05	6600-20M	330	1.10
5200-20M	260	1.05			



## 20M PowerGrip® HTD® Power Rating Table — 340mm Belt Width

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)							
	52 13.033	56 14.036	60 15.038	64 16.041	68 17.043	72 18.046	80 20.051	90 22.557
10	16.1	17.3	18.3	19.3	20.2	21.2	23.0	25.2
20	32.2	34.6	36.6	38.6	40.5	42.3	46.0	50.5
30	48.2	51.9	54.9	57.8	60.7	63.5	69.0	75.7
40	64.3	69.3	73.3	77.1	80.9	84.7	92.0	100.9
50	80.4	86.6	91.6	96.4	101.2	105.8	115.0	126.1
60	96.5	103.9	109.9	115.7	121.4	127.0	138.0	151.3
80	128.6	138.5	146.5	154.2	161.8	169.3	183.9	201.7
100	160.7	173.1	183.0	192.7	202.2	211.5	229.8	252.0
150	241.0	259.4	274.4	288.8	303.0	316.9	344.2	377.2
200	321.1	345.6	365.4	384.6	403.4	421.9	458.1	501.7
300	470.8	499.0	526.5	553.5	580.0	605.9	656.2	716.5
400	588.8	623.0	656.4	688.9	720.5	751.4	810.9	881.1
500	697.0	736.2	774.2	811.1	846.7	881.2	946.9	1022.9
+600	796.7	839.8	881.4	921.3	959.7	996.5	1065.3	1142.4
+730	914.4	961.2	1005.6	1047.7	1087.5	1125.0	1192.8	1264.1
+800	972.5	1020.4	1065.6	1108.0	1147.5	1184.2	1248.9	1313.1
+870	1027.0	1075.5	1120.7	1162.6	1201.2	1236.3	1296.0	1350.1
+970	1098.5	1146.9	1191.1	1231.0	1266.7	1297.9	1346.7	
+1170	1219.1	1263.2	1300.9	1332.0	1356.4	1373.8	1386.9	
+1200	1234.6	1277.5	1313.7	1342.9	1364.9	1379.5	1385.4	
+1460	1338.6	1366.0	1382.4	1387.4	1380.5			
+1600	1371.4	1385.7	1386.1					
+1750	1387.3	1383.5						

+ Drives within this speed range may generate an objectionable noise level. This can be reduced by using commercially available acoustical damping material in the belt guard. Contact Gates for recommendations on any drive to be installed in a noise sensitive area.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Length Correction Factor}]$$

### 20M Belt Length Correction Factor

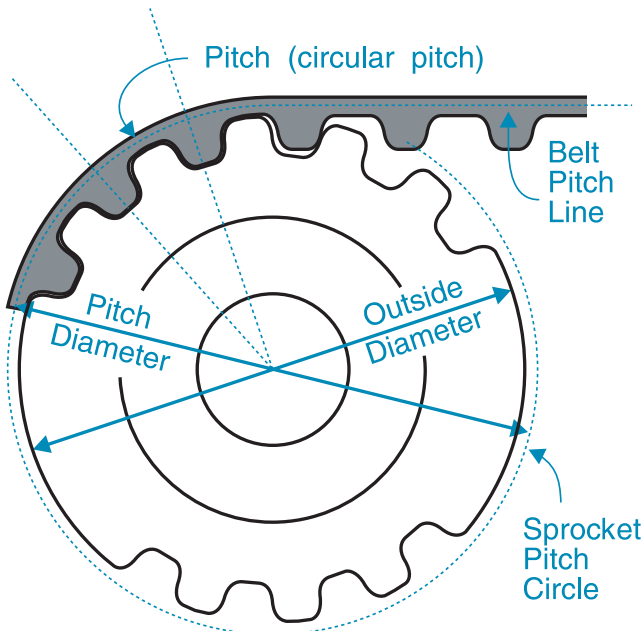
Pitch/Length Designation	No. of Teeth	Correction Factor	Pitch/Length Designation	No. of Teeth	Correction Factor
2000-20M	100	0.80	5400-20M	270	1.05
2500-20M	125	0.85	5600-20M	280	1.05
3400-20M	170	0.95	5800-20M	290	1.10
3800-20M	190	1.00	6000-20M	300	1.10
4200-20M	210	1.00	6200-20M	310	1.10
4600-20M	230	1.00	6400-20M	320	1.10
5000-20M	250	1.05	6600-20M	330	1.10
5200-20M	260	1.05			



PowerGrip® Timing Belt drives operate with the molded teeth of the belt designed to make positive engagement with the matching grooves on the pulleys. Gates PowerGrip belts have helically-wound fiberglass tension members embedded in a Neoprene® body with the belt teeth faced with a tough wear-resistant nylon fabric. The three principal dimensions, in inches, shown below, are used to specify a Timing belt.

<b>330</b>	<b>XL</b>	<b>025</b>
33.0" pitch	.200" pitch	.25" wide
length		

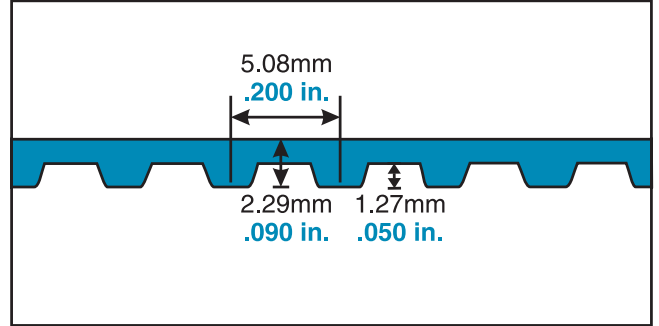
Belt pitch is the distance in inches between two adjacent tooth centers as measured on the pitch line of the belt. Belt pitch length is the total length (circumference) in inches as measured along the pitch line. The theoretical pitch line of a Timing belt lies within the tensile member.



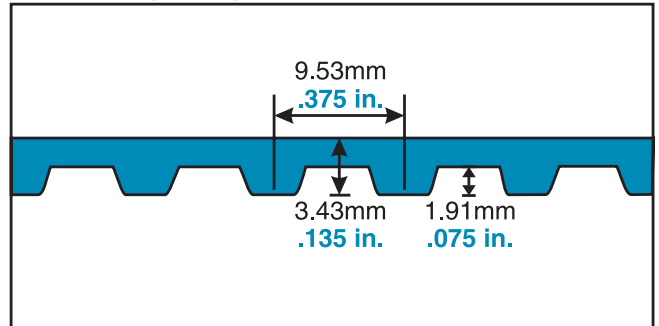
The three principal dimensions used to specify a pulley number of grooves, pitch and belt width in inches are shown below.

<b>20</b>	<b>XL</b>	<b>025</b>
Number of grooves	Pitch	Belt Width (1/4")

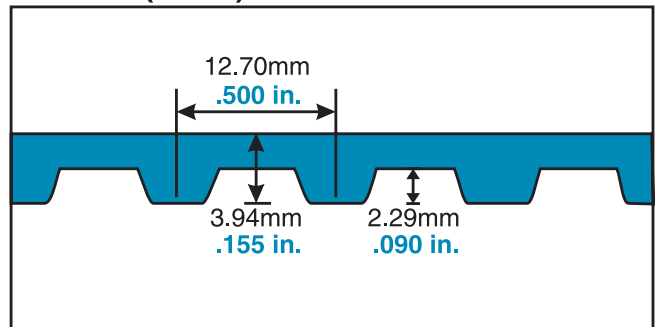
## XL Pitch (.200") - Reference Dimensions



## L Pitch (.375") - Reference Dimensions



## H Pitch (.500") - Reference Dimensions



\* Neoprene is a trademark of Dupont

# PowerGrip® Timing Belt Drives

## 1/5" Pitch Extra Light (XL) PowerGrip® Timing Stock Belt Lengths

Part No.	Pitch Length (in)	No. of Teeth
42XL	4.20	21
50XL	5.00	25
54XL	5.40	27
56XL	5.60	28
58XL	5.80	29
60XL	6.00	30
62XL	6.20	31
64XL	6.40	32
66XL	6.60	33
68XL	6.80	34
70XL	7.00	35
72XL	7.20	36
74XL	7.40	37
76XL	7.60	38
78XL	7.80	39
80XL	8.00	40
82XL	8.20	41
84XL	8.40	42
86XL	8.60	43
88XL	8.80	44
90XL	9.00	45
92XL	9.20	46
94XL	9.40	47
96XL	9.60	48
98XL	9.80	49
100XL	10.00	50
102XL	10.20	51
106XL	10.60	53
108XL	10.80	54
110XL	11.00	55
112XL	11.20	56
114XL	11.40	57
116XL	11.60	58
120XL	12.00	60
122XL	12.20	61
124XL	12.40	62
126XL	12.60	63
128XL	12.80	64
130XL	13.00	65
132XL	13.20	66
134XL	13.40	67
136XL	13.60	68
138XL	13.80	69
140XL	14.00	70
142XL	14.20	71
144XL	14.40	72
146XL	14.60	73
148XL	14.80	74
150XL	15.00	75
152XL	15.20	76
154XL	15.40	77
156XL	15.60	78
158XL	15.80	79
160XL	16.00	80
162XL	16.20	81
164XL	16.40	82
166XL	16.60	83
168XL	16.80	84
170XL	17.00	85
172XL	17.20	86
174XL	17.40	87
176XL	17.60	88
178XL	17.80	89
180XL	18.00	90
182XL	18.20	91
184XL	18.40	92
186XL	18.60	93
188XL	18.80	94
190XL	19.00	95
192XL	19.20	96
194XL	19.40	97
200XL	20.00	100
202XL	20.20	101

XL Stock Belt Widths	
Belt Width Code	Belt Width (in)
025	0.250
037	0.375

## 3/8" Pitch Light (L) PowerGrip® Timing Stock Belt Lengths

Part No.	Pitch Length (in)	No. of Teeth
204XL	20.40	102
206XL	20.60	103
210XL	21.00	105
212XL	21.20	106
214XL	21.40	107
218XL	21.80	109
220XL	22.00	110
222XL	22.20	111
226XL	22.60	113
228XL	22.80	114
230XL	23.00	115
232XL	23.20	116
234XL	23.40	117
236XL	23.60	118
240XL	24.00	120
244XL	24.40	122
246XL	24.60	123
250XL	25.00	125
254XL	25.40	127
258XL	25.80	129
260XL	26.00	130
262XL	26.20	131
264XL	26.40	132
266XL	26.60	133
268XL	26.80	134
274XL	27.40	137
280XL	28.00	140
286XL	28.60	143
290XL	29.00	145
296XL	29.60	148
300XL	30.00	150
306XL	30.60	153
310XL	31.00	155
316XL	31.60	158
320XL	32.00	160
322XL	32.20	161
330XL	33.00	165
338XL	33.80	169
340XL	34.00	170
344XL	34.40	172
348XL	34.80	174
350XL	35.00	175
362XL	36.20	181
370XL	37.00	185
380XL	38.00	190
384XL	38.40	192
390XL	39.00	195
400XL	40.00	200
412XL	41.20	206
420XL	42.00	210
424XL	42.40	212
432XL	43.20	216
438XL	43.80	219
444XL	44.40	222
450XL	45.00	225
454XL	45.40	227
460XL	46.00	230
468XL	46.80	234
480XL	48.00	240
492XL	49.20	246
498XL	49.80	249
500XL	50.00	250
506XL	50.60	253
524XL	52.40	262
570XL	57.00	285
580XL	58.00	290
592XL	59.20	296
612XL	61.20	306
630XL	63.00	315
672XL	67.20	336
690XL	69.00	345
770XL	77.00	385
850XL	85.00	425

L Stock Belt Widths	
Belt Width Code	Belt Width (in)
050	0.500
075	0.750
100	1.000

## 1/2" Pitch Heavy (H) PowerGrip® Timing Stock Belt Lengths

Part No.	Pitch Length (in)	No. of Teeth
210H	21.00	42
220H	22.00	44
225H	22.50	45
230H	23.00	46
240H	24.00	48
270H	27.00	54
300H	30.00	60
310H	31.00	62
315H	31.50	63
320H	32.00	64
330H	33.00	66
340H	34.00	68
350H	35.00	70
360H	36.00	72
370H	37.00	74
390H	39.00	78
400H	40.00	80
410H	41.00	82
415H	41.50	83
420H	42.00	84
445H	44.50	89
450H	45.00	90
455H	45.50	91
465H	46.50	93
480H	48.00	96
490H	49.00	98
495H	49.50	99
510H	51.00	102
525H	52.50	105
540H	54.00	108
555H	55.50	111
560H	56.00	112
570H	57.00	114
585H	58.50	117
600H	60.00	120
605H	60.50	121
630H	63.00	126
645H	64.50	129
655H	65.50	131
660H	66.00	132
670H	67.00	134
700H	70.00	140
730H	73.00	146
750H	75.00	150
775H	77.50	155
780H	78.00	156
800H	80.00	160
810H	81.00	162
820H	82.00	164
840H	84.00	168
850H	85.00	170
900H	90.00	180
950H	95.00	190
960H	96.00	192
1000H	100.00	200
1100H	110.00	220
1140H	114.00	228
1180H	118.00	236
1250H	125.00	250
1325H	132.50	265
1350H	135.00	270
1365H	136.50	273
1400H	140.00	280
1510H	151.00	302
1550H	155.00	310
1645H	164.50	329
1680H	168.00	336
1700H	170.00	340
2090H	209.00	418
2100H	210.00	420
2120H	212.00	424
2330H	233.00	466

H Stock Belt Widths	
Belt Width Code	Belt Width (in)
75	0.750
100	1.000
150	1.500
200	2.000
300	3.000

Refer to the Industrial Power Transmission Products catalog, 19993, for a listing of XH and XXH PowerGrip Timing belts for replacement use on existing drives.











For motor speed of	Driver		Sprocket Combinations		Center Distance, Inches																																																																																																																																									
	1160 RPM	1750 RPM	No. of Grooves	Pitch Diam. Inches	Pitch Diam. No. of Grooves	Drivell	Speed Ratio	P.L. 15.00		P.L. 15.20		P.L. 15.40		P.L. 15.60		P.L. 15.80		P.L. 16.00		P.L. 16.20		P.L. 16.40		P.L. 16.60		P.L. 16.80		P.L. 17.00		P.L. 17.20		P.L. 17.40		P.L. 17.60		P.L. 17.80		P.L. 18.00		P.L. 18.20		P.L. 18.40		P.L. 18.60		P.L. 18.80		P.L. 19.00		P.L. 19.20		P.L. 19.40		P.L. 19.60		P.L. 20.00																																																																																						
								150XL	152XL	154XL	156XL	158XL	160XL	162XL	164XL	166XL	168XL	170XL	172XL	174XL	176XL	178XL	180XL	182XL	184XL	186XL	188XL	190XL	192XL	194XL	196XL	198XL	200XL																																																																																																													
1160	1750	3450	10	0.637	10	0.637	1.000	6.60	6.70	6.80	6.90	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	20.00

0.6

0.8

1.0

Teeth in Mesh Factor:





# XL, 0.200" Pitch Belts

# Drive Selection Table

Drive Speed For motor speed of	Sprocket Combinations			Center Distance, Inches																																																																						
	Driver	Driven	Ratio	202X P.L. 20.20	204X P.L. 20.40	206X P.L. 20.60	210X P.L. 21.00	212X P.L. 21.20	214X P.L. 21.40	218X P.L. 21.80	220X P.L. 22.00	222X P.L. 22.20	226X P.L. 22.60	228X P.L. 22.80	232X P.L. 23.20	234X P.L. 23.40	236X P.L. 23.60	240X P.L. 24.00	246X P.L. 24.60	250X P.L. 25.00	254X P.L. 25.40	258X P.L. 25.80	260X P.L. 26.00	262X P.L. 26.20	264X P.L. 26.40	266X P.L. 26.60																																																
1160 RPM	1750 RPM	3450 RPM	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.	No. of Grooves	Pitch Diam. In.																																														
1160	1750	3450	10	0.637	1.000	9.10	9.20	9.30	9.50	9.60	9.70	9.80	9.90	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	16.00

0.6

0.8

1.0

Teeth in Mesh Factor:



# XL, 0.200" Pitch Belts

# Drive Selection Table

# XL, 0.200" Pitch Belts

For motor speed of	DriveN Speed			Sprocket Combinations			Center Distance, Inches																																																																																																																																																																																																																																																																																																																																																																																																																	
	1160 RPM	1750 RPM	3450 RPM	DriveN		Speed Ratio	Center Distance, Inches																																																																																																																																																																																																																																																																																																																																																																																																																	
				Drive	Driven		Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves																																																																																																																																																																																																																																																																																																																																																																																								
1160	1750	3450	10	0.637	10	0.637	1.960	20.00	20.20	20.40	20.60	20.80	21.00	21.20	21.40	21.60	21.80	22.00	22.20	22.40	22.60	22.80	23.00	23.20	23.40	23.60	23.80	24.00	24.20	24.40	24.60	24.80	25.00	25.20	25.40	25.60	25.80	26.00	26.20	26.40	26.60	26.80	27.00	27.20	27.40	27.60	27.80	28.00	28.20	28.40	28.60	28.80	29.00	29.20	29.40	29.60	29.80	30.00	30.20	30.40	30.60	30.80	31.00	31.20	31.40	31.60	31.80	32.00	32.20	32.40	32.60	32.80	33.00	33.20	33.40	33.60	33.80	34.00	34.20	34.40	34.60	34.80	35.00	35.20	35.40	35.60	35.80	36.00	36.20	36.40	36.60	36.80	37.00	37.20	37.40	37.60	37.80	38.00	38.20	38.40	38.60	38.80	39.00	39.20	39.40	39.60	39.80	40.00	40.20	40.40	40.60	40.80	41.00	41.20	41.40	41.60	41.80	42.00	42.20	42.40	42.60	42.80	43.00	43.20	43.40	43.60	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	45.40	45.60	45.80	46.00	46.20	46.40	46.60	46.80	47.00	47.20	47.40	47.60	47.80	48.00	48.20	48.40	48.60	48.80	49.00	49.20	49.40	49.60	49.80	50.00	50.20	50.40	50.60	50.80	51.00	51.20	51.40	51.60	51.80	52.00	52.20	52.40	52.60	52.80	53.00	53.20	53.40	53.60	53.80	54.00	54.20	54.40	54.60	54.80	55.00	55.20	55.40	55.60	55.80	56.00	56.20	56.40	56.60	56.80	57.00	57.20	57.40	57.60	57.80	58.00	58.20	58.40	58.60	58.80	59.00	59.20	59.40	59.60	59.80	60.00	60.20	60.40	60.60	60.80	61.00	61.20	61.40	61.60	61.80	62.00	62.20	62.40	62.60	62.80	63.00	63.20	63.40	63.60	63.80	64.00	64.20	64.40	64.60	64.80	65.00	65.20	65.40	65.60	65.80	66.00	66.20	66.40	66.60	66.80	67.00	67.20	67.40	67.60	67.80	68.00	68.20	68.40	68.60	68.80	69.00	69.20	69.40	69.60	69.80	70.00	70.20	70.40	70.60	70.80	71.00	71.20	71.40	71.60	71.80	72.00	72.20	72.40	72.60	72.80	73.00	73.20	73.40	73.60	73.80	74.00	74.20	74.40	74.60	74.80	75.00	75.20	75.40	75.60	75.80	76.00	76.20	76.40	76.60	76.80	77.00	77.20	77.40	77.60	77.80	78.00	78.20	78.40	78.60	78.80	79.00	79.20	79.40	79.60	79.80	80.00	80.20	80.40	80.60	80.80	81.00	81.20	81.40	81.60	81.80	82.00	82.20	82.40	82.60	82.80	83.00	83.20	83.40	83.60	83.80	84.00	84.20	84.40	84.60	84.80	85.00	85.20	85.40	85.60	85.80	86.00	86.20	86.40	86.60	86.80	87.00	87.20	87.40	87.60	87.80	88.00	88.20	88.40	88.60	88.80	89.00	89.20	89.40	89.60	89.80	90.00	90.20	90.40	90.60	90.80	91.00	91.20	91.40	91.60	91.80	92.00	92.20	92.40	92.60	92.80	93.00	93.20	93.40	93.60	93.80	94.00	94.20	94.40	94.60	94.80	95.00	95.20	95.40	95.60	95.80	96.00	96.20	96.40	96.60	96.80	97.00	97.20	97.40	97.60	97.80	98.00	98.20	98.40	98.60	98.80	99.00	99.20	99.40	99.60	99.80	100.00

0.6

0.8

1.0

Teeth in Mesh Factor:













Drive Motor Speed		Sprocket Combinations			Center Distance, Inches																																																																																																																																																																																																																																																																																																																																																												
RPM	3450 RPM	Pitch Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	Speed Ratio	1.0		0.8		0.6		0.5		0.4		0.3		0.25		0.2		0.15		0.125		0.1																																																																																																																																																																																																																																																																																																																																						
							1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM	1750 RPM	1160 RPM																																																																																																																																																																																																																																																																																																																															
773	1667	2300	1.5	0.955	15	1.500	12.15	12.45	13.25	13.55	13.75	14.05	14.25	14.55	14.75	14.85	15.25	15.65	15.75	15.95	16.15	16.25	16.85	17.25	17.35	17.75	17.95	18.25	18.75	19.00	19.50	19.75	20.00	20.25	20.50	20.75	21.00	21.25	21.50	21.75	22.00	22.25	22.50	22.75	23.00	23.25	23.50	23.75	24.00	24.25	24.50	24.75	25.00	25.25	25.50	25.75	26.00	26.25	26.50	26.75	27.00	27.25	27.50	27.75	28.00	28.25	28.50	28.75	29.00	29.25	29.50	29.75	30.00	30.25	30.50	30.75	31.00	31.25	31.50	31.75	32.00	32.25	32.50	32.75	33.00	33.25	33.50	33.75	34.00	34.25	34.50	34.75	35.00	35.25	35.50	35.75	36.00	36.25	36.50	36.75	37.00	37.25	37.50	37.75	38.00	38.25	38.50	38.75	39.00	39.25	39.50	39.75	40.00	40.25	40.50	40.75	41.00	41.25	41.50	41.75	42.00	42.25	42.50	42.75	43.00	43.25	43.50	43.75	44.00	44.25	44.50	44.75	45.00	45.25	45.50	45.75	46.00	46.25	46.50	46.75	47.00	47.25	47.50	47.75	48.00	48.25	48.50	48.75	49.00	49.25	49.50	49.75	50.00	50.25	50.50	50.75	51.00	51.25	51.50	51.75	52.00	52.25	52.50	52.75	53.00	53.25	53.50	53.75	54.00	54.25	54.50	54.75	55.00	55.25	55.50	55.75	56.00	56.25	56.50	56.75	57.00	57.25	57.50	57.75	58.00	58.25	58.50	58.75	59.00	59.25	59.50	59.75	60.00	60.25	60.50	60.75	61.00	61.25	61.50	61.75	62.00	62.25	62.50	62.75	63.00	63.25	63.50	63.75	64.00	64.25	64.50	64.75	65.00	65.25	65.50	65.75	66.00	66.25	66.50	66.75	67.00	67.25	67.50	67.75	68.00	68.25	68.50	68.75	69.00	69.25	69.50	69.75	70.00	70.25	70.50	70.75	71.00	71.25	71.50	71.75	72.00	72.25	72.50	72.75	73.00	73.25	73.50	73.75	74.00	74.25	74.50	74.75	75.00	75.25	75.50	75.75	76.00	76.25	76.50	76.75	77.00	77.25	77.50	77.75	78.00	78.25	78.50	78.75	79.00	79.25	79.50	79.75	80.00	80.25	80.50	80.75	81.00	81.25	81.50	81.75	82.00	82.25	82.50	82.75	83.00	83.25	83.50	83.75	84.00	84.25	84.50	84.75	85.00	85.25	85.50	85.75	86.00	86.25	86.50	86.75	87.00	87.25	87.50	87.75	88.00	88.25	88.50	88.75	89.00	89.25	89.50	89.75	90.00	90.25	90.50	90.75	91.00	91.25	91.50	91.75	92.00	92.25	92.50	92.75	93.00	93.25	93.50	93.75	94.00	94.25	94.50	94.75	95.00	95.25	95.50	95.75	96.00	96.25	96.50	96.75	97.00	97.25	97.50	97.75	98.00	98.25	98.50	98.75	99.00	99.25	99.50	99.75	100.00

Teeth in Mesh Factor:

1.0

0.8

0.6













**XL, 0.200" Pitch Belts**

**Drive Selection Table**

Drivell Speed For motor speed of	Sprocket Combinations			Center Distance, Inches		
	DriveR	DriveL	Drivew			
1160 RPM	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches
3450 RPM	15	1.528	24	1.528	24	1.528
1750 RPM	30	1.528	24	1.528	24	1.528
1160 RPM	15	1.674	36	1.674	36	1.674
1750 RPM	30	1.674	36	1.674	36	1.674
1160 RPM	15	1.820	48	1.820	48	1.820
1750 RPM	30	1.820	48	1.820	48	1.820
1160 RPM	15	1.966	60	1.966	60	1.966
1750 RPM	30	1.966	60	1.966	60	1.966
1160 RPM	15	2.112	72	2.112	72	2.112
1750 RPM	30	2.112	72	2.112	72	2.112
1160 RPM	15	2.258	84	2.258	84	2.258
1750 RPM	30	2.258	84	2.258	84	2.258
1160 RPM	15	2.404	96	2.404	96	2.404
1750 RPM	30	2.404	96	2.404	96	2.404
1160 RPM	15	2.550	108	2.550	108	2.550
1750 RPM	30	2.550	108	2.550	108	2.550
1160 RPM	15	2.696	120	2.696	120	2.696
1750 RPM	30	2.696	120	2.696	120	2.696
1160 RPM	15	2.842	132	2.842	132	2.842
1750 RPM	30	2.842	132	2.842	132	2.842
1160 RPM	15	2.988	144	2.988	144	2.988
1750 RPM	30	2.988	144	2.988	144	2.988



0.4

0.6

0.8

1.0

Teeth in Mesh Factor:













Drive Speed		Sprocket Combinations					Center Distance, Inches
For motor speed of		DriveR		DriveN			
1160 RPM	3450 RPM	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	Pitch Ratio	
714	1077	16	1.910	26	3.104	1.825	
709	1070	22	2.626	36	4.297	1.636	
709	1070	21	2.099	44	5.252	1.636	
704	1063	20	2.029	28	3.342	1.647	
696	1050	17	1.432	20	2.387	1.667	
696	1050	18	2.149	30	3.581	1.667	
696	1050	20	2.865	40	4.775	1.667	
696	1050	24	4.297	60	7.162	1.667	
689	1039	19	2.268	32	3.820	1.684	
686	1034	26	3.104	44	5.252	1.692	
682	1029	20	1.194	17	2.029	1.700	
677	1021	20	1.671	24	2.865	1.714	
677	1021	21	2.507	36	4.297	1.714	
677	1021	28	3.342	48	5.730	1.714	
663	1000	12	1.432	21	2.507	1.750	
663	1000	16	1.910	28	3.342	1.750	
663	1000	17	1.194	84	10.027	1.750	
657	992	17	2.029	30	3.581	1.765	
652	984	18	2.149	32	3.820	1.778	
644	972	16	1.194	18	2.149	1.800	
644	972	20	2.387	36	4.297	1.800	
638	963	20	2.865	44	5.252	1.800	
633	955	12	1.432	22	2.626	1.833	
623	948	26	3.104	44	5.252	1.833	
625	942	18	1.671	26	3.104	1.857	
619	933	16	1.910	30	3.581	1.875	
619	933	32	3.820	60	7.162	1.875	
616	930	17	2.029	32	3.820	1.882	
612	923	19	2.268	36	4.297	1.895	
611	921	16	1.194	19	2.268	1.900	
609	919	21	2.507	40	4.775	1.905	
608	917	44	5.252	84	10.027	1.909	
580	875	17	1.194	20	2.387	2.000	
580	875	24	2.865	24	2.865	2.000	
580	875	28	3.342	28	3.342	2.000	
580	875	32	3.820	32	3.820	2.000	
580	875	36	4.297	36	4.297	2.000	
580	875	40	4.775	40	4.775	2.000	
580	875	44	5.252	44	5.252	2.000	
580	875	48	5.730	48	5.730	2.000	
580	875	60	7.162	60	7.162	2.000	
580	875	72	8.594	72	8.594	2.000	
554	835	21	2.507	44	5.252	2.095	
552	833	10	1.194	21	2.507	2.100	
552	833	16	1.671	30	3.581	2.100	
551	831	19	2.268	40	4.775	2.105	
548	826	17	2.029	36	4.297	2.118	
541	817	14	1.671	30	3.581	2.143	
541	817	28	3.342	60	7.162	2.143	
535	808	12	1.432	26	3.104	2.167	
532	802	14	2.149	32	3.820	2.182	
532	802	44	5.252	96	11.459	2.182	
527	795	10	1.194	22	2.626	2.200	
527	795	20	2.387	44	5.252	2.200	

Teeth in Mesh Factor:

0.8

0.6

0.6

0.6

0.6

0.6

















# H, 0.500" Pitch Belts

# Drive Selection Table

Drive/Speed For motor speed of	Sprocket Combinations						Center Distance, Inches																																																																				
	Driver		Driven		Speed Ratio	Pitch																																																																					
	No. of Grooves	Diam. Inches	No. of Grooves	Diam. Inches																																																																							
1160 RPM	3450 RPM	14	2,228	14	2,228	1.000	34.00	P.L. 48.00	T. 98 Teeth	4.90H	P.L. 49.00	T. 99 Teeth	4.95H	P.L. 51.00	T. 102 Teeth	5.25H	P.L. 52.50	T. 105 Teeth	5.40H	P.L. 54.00	T. 108 Teeth	5.55H	P.L. 55.50	T. 111 Teeth	5.60H	P.L. 56.00	T. 112 Teeth	5.60H	P.L. 57.00	T. 114 Teeth	5.85H	P.L. 58.50	T. 117 Teeth	6.00H	P.L. 60.00	T. 120 Teeth	6.05H	P.L. 60.50	T. 121 Teeth	6.30H	P.L. 63.00	T. 126 Teeth	6.45H	P.L. 64.50	T. 129 Teeth	6.55H	P.L. 65.50	T. 131 Teeth	6.60H	P.L. 66.00	T. 132 Teeth	6.70H	P.L. 67.00	T. 133 Teeth	7.00H	P.L. 70.00	T. 140 Teeth	7.30H	P.L. 73.00	T. 146 Teeth	7.50H	P.L. 75.00	T. 150 Teeth	7.75H	P.L. 77.50	T. 155 Teeth	7.80H	P.L. 78.00	T. 156 Teeth	8.00H	P.L. 80.00	T. 160 Teeth	8.10H	P.L. 81.00	T. 162 Teeth

Tooth in Mesh Factor:

1.0











H, 0.500" Pitch Belts

Drive Selection Table

Table with 3 columns: Drive Speed, Sprocket Combinations, and Center Distance (Inches). The table lists various belt specifications and their corresponding sprocket combinations.















# H, 0.500" Pitch Belts

## Drive Selection Table

Drive/Speed		Sprocket Combinations			Center Distance, Inches																																																																																																																																																																																																																																																																									
For motor speed of	Drive/Speed	No. of Grooves	Pitch Diam. Inches	No. of Grooves	Pitch Diam. Inches	Speed Ratio	1160 RPM		1170 RPM		1180 RPM		1190 RPM		1200 RPM		1210 RPM		1220 RPM		1230 RPM		1240 RPM		1250 RPM		1260 RPM		1270 RPM		1280 RPM		1290 RPM		1300 RPM		1310 RPM		1320 RPM		1330 RPM		1340 RPM		1350 RPM		1365 RPM		1375 RPM		1390 RPM		1400 RPM		1410 RPM		1420 RPM		1430 RPM		1440 RPM		1450 RPM		1460 RPM		1470 RPM		1480 RPM		1490 RPM		1500 RPM		1510 RPM		1520 RPM		1530 RPM		1545 RPM		1560 RPM		1575 RPM		1590 RPM		1600 RPM		1610 RPM		1620 RPM		1630 RPM		1640 RPM		1650 RPM		1660 RPM		1670 RPM		1680 RPM		1690 RPM		1700 RPM		1710 RPM		1720 RPM		1730 RPM		1740 RPM		1750 RPM		1760 RPM		1770 RPM		1780 RPM		1790 RPM		1800 RPM		1810 RPM		1820 RPM		1830 RPM		1840 RPM		1850 RPM		1860 RPM		1870 RPM		1880 RPM		1890 RPM		1900 RPM		1910 RPM		1920 RPM		1930 RPM		1940 RPM		1950 RPM		1960 RPM		1970 RPM		1980 RPM		1990 RPM		2000 RPM		2010 RPM		2020 RPM		2030 RPM		2040 RPM		2050 RPM		2060 RPM		2070 RPM		2080 RPM		2090 RPM		2100 RPM		2110 RPM		2120 RPM		2130 RPM		2140 RPM		2150 RPM		2160 RPM		2170 RPM		2180 RPM		2190 RPM		2200 RPM		2210 RPM		2220 RPM		2230 RPM		2240 RPM		2250 RPM		2260 RPM		2270 RPM		2280 RPM		2290 RPM		2300 RPM		2310 RPM		2320 RPM		2330 RPM		2340 RPM		2350 RPM		2360 RPM		2370 RPM		2380 RPM		2390 RPM		2400 RPM		2410 RPM		2420 RPM		2430 RPM		2440 RPM		2450 RPM		2460 RPM		2470 RPM		2480 RPM		2490 RPM		2500 RPM	
							357	538	1062	48	24,828	156	3,250	17,32	20,14	22,69	22,87	28,18	30,27	32,35	35,97	39,82	41,10	41,87	43,65	49,25	51,28	56,09	57,86	58,87	62,19	64,13	66,09	67,14	71,14	73,14	75,18	76,20	77,20	78,20	79,20	80,20	81,20	82,20	83,20	84,20	85,20	86,20	87,20	88,20	89,20	90,20	91,20	92,20	93,20	94,20	95,20	96,20	97,20	98,20	99,20	100,20	101,20	102,20	103,20	104,20	105,20	106,20	107,20	108,20	109,20	110,20	111,20	112,20	113,20	114,20	115,20	116,20	117,20	118,20	119,20	120,20	121,20	122,20	123,20	124,20	125,20	126,20	127,20	128,20	129,20	130,20	131,20	132,20	133,20	134,20	135,20	136,20	137,20	138,20	139,20	140,20	141,20	142,20	143,20	144,20	145,20	146,20	147,20	148,20	149,20	150,20	151,20	152,20	153,20	154,20	155,20	156,20	157,20	158,20	159,20	160,20	161,20	162,20	163,20	164,20	165,20	166,20	167,20	168,20	169,20	170,20	171,20	172,20	173,20	174,20	175,20	176,20	177,20	178,20	179,20	180,20	181,20	182,20	183,20	184,20	185,20	186,20	187,20	188,20	189,20	190,20	191,20	192,20	193,20	194,20	195,20	196,20	197,20	198,20	199,20	200,20	201,20	202,20	203,20	204,20	205,20	206,20	207,20	208,20	209,20	210,20	211,20	212,20	213,20	214,20	215,20	216,20	217,20	218,20	219,20	220,20	221,20	222,20	223,20	224,20	225,20	226,20	227,20	228,20	229,20	230,20	231,20	232,20	233,20	234,20	235,20	236,20	237,20	238,20	239,20	240,20	241,20	242,20	243,20	244,20	245,20	246,20	247,20	248,20	249,20	250,20																																																										

Teeth in Mesh Factor:

1.0

0.8

0.6

0.4





# XL (0.200 Inch Pitch) PowerGrip® Power Rating Table – 0.25 Inch Belt Width

RPM of Faster Shaft	Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)												
	10XL 0.637	11XL 0.700	12XL 0.764	14XL 0.891	15XL 0.955	16XL 1.019	18XL 1.146	20XL 1.273	21XL 1.337	22XL 1.401	24XL 1.528	28XL 1.783	30XL 1.910
950	0.034	0.038	0.041	0.048	0.051	0.055	0.062	0.069	0.072	0.075	0.082	0.096	0.10
1160	0.042	0.046	0.050	0.059	0.063	0.067	0.075	0.084	0.088	0.092	0.10	0.12	0.13
1425	0.051	0.057	0.062	0.072	0.077	0.082	0.093	0.10	0.11	0.11	0.12	0.14	0.15
1750	0.063	0.069	0.076	0.088	0.095	0.10	0.11	0.13	0.13	0.14	0.15	0.18	0.19
2850	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
3450	0.12	0.14	0.15	0.17	0.19	0.20	0.22	0.25	0.26	0.27	0.29	0.34	0.36
100	0.004	0.004	0.004	0.005	0.005	0.006	0.007	0.007	0.008	0.008	0.009	0.010	0.011
200	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.020	0.022
300	0.011	0.012	0.013	0.015	0.016	0.017	0.020	0.022	0.023	0.024	0.026	0.030	0.033
400	0.014	0.016	0.017	0.020	0.022	0.023	0.026	0.029	0.030	0.032	0.035	0.040	0.043
500	0.018	0.020	0.022	0.025	0.027	0.029	0.033	0.036	0.038	0.040	0.043	0.051	0.054
600	0.022	0.024	0.026	0.030	0.033	0.035	0.039	0.043	0.046	0.048	0.052	0.061	0.065
700	0.025	0.028	0.030	0.035	0.038	0.040	0.046	0.051	0.053	0.056	0.061	0.071	0.076
800	0.029	0.032	0.035	0.040	0.043	0.046	0.052	0.058	0.061	0.064	0.069	0.081	0.087
900	0.033	0.036	0.039	0.046	0.049	0.052	0.059	0.065	0.068	0.072	0.078	0.091	0.097
1000	0.036	0.040	0.043	0.051	0.054	0.058	0.065	0.072	0.076	0.079	0.087	0.10	0.11
1100	0.040	0.044	0.048	0.056	0.060	0.064	0.072	0.079	0.083	0.087	0.095	0.11	0.12
1200	0.043	0.048	0.052	0.061	0.065	0.069	0.078	0.087	0.091	0.095	0.10	0.12	0.13
1300	0.047	0.052	0.056	0.066	0.070	0.075	0.084	0.094	0.098	0.10	0.11	0.13	0.14
1400	0.051	0.056	0.061	0.071	0.076	0.081	0.091	0.10	0.11	0.11	0.12	0.14	0.15
1500	0.054	0.060	0.065	0.076	0.081	0.087	0.097	0.11	0.11	0.12	0.13	0.15	0.16
1600	0.058	0.064	0.069	0.081	0.087	0.092	0.10	0.12	0.12	0.13	0.14	0.16	0.17
1700	0.061	0.068	0.074	0.086	0.092	0.098	0.11	0.12	0.13	0.13	0.15	0.17	0.18
1800	0.065	0.071	0.078	0.091	0.097	0.10	0.12	0.13	0.14	0.14	0.16	0.18	0.19
2000	0.072	0.079	0.087	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.21
2200	0.079	0.087	0.095	0.11	0.12	0.13	0.14	0.16	0.17	0.17	0.19	0.22	0.24
2400	0.087	0.095	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.21	0.24	0.26
2600	0.094	0.10	0.11	0.13	0.14	0.15	0.17	0.19	0.20	0.20	0.22	0.26	0.28
2800	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
3000	0.11	0.12	0.13	0.15	0.16	0.17	0.19	0.21	0.22	0.24	0.26	0.30	0.32
3200	0.12	0.13	0.14	0.16	0.17	0.18	0.21	0.23	0.24	0.25	0.27	0.32	0.34
3400	0.12	0.13	0.15	0.17	0.18	0.19	0.22	0.24	0.25	0.27	0.29	0.33	0.36
3600	0.13	0.14	0.16	0.18	0.19	0.21	0.23	0.26	0.27	0.28	0.31	0.35	0.38
3800	0.14	0.15	0.16	0.19	0.20	0.22	0.24	0.27	0.28	0.30	0.32	0.37	0.40
4000	0.14	0.16	0.17	0.20	0.21	0.23	0.26	0.28	0.30	0.31	0.34	0.39	0.41
4200	0.15	0.17	0.18	0.21	0.22	0.24	0.27	0.30	0.31	0.33	0.35	0.41	0.43
4400	0.16	0.17	0.19	0.22	0.24	0.25	0.28	0.31	0.33	0.34	0.37	0.42	0.45
4600	0.17	0.18	0.20	0.23	0.25	0.26	0.29	0.32	0.34	0.35	0.38	0.44	0.47
4800	0.17	0.19	0.21	0.24	0.26	0.27	0.31	0.34	0.35	0.37	0.40	0.46	0.49
5000	0.18	0.20	0.21	0.25	0.27	0.28	0.32	0.35	0.37	0.38	0.41	0.48	0.50
5500					0.29	0.31	0.35	0.38	0.40	0.42	0.45	0.52	0.55
6000					0.32	0.34	0.38	0.41	0.43	0.45	0.49	0.55	0.58
6500					0.34	0.36	0.40	0.45	0.46	0.48	0.52	0.59	0.62
7000					0.37	0.39	0.43	0.48	0.50	0.52	0.55	0.62	0.65
7500					0.39	0.41	0.46	0.50	0.53	0.55	0.58	0.65	0.68
8000							0.49	0.53	0.55	0.57	0.61	0.68	0.71
8500							0.51	0.56	0.58	0.60	0.64	0.71	0.73
9000							0.54	0.58	0.61	0.63	0.67	0.73	0.75
9500							0.56	0.61	0.63	0.65	0.69	0.75	0.77
10000							0.58	0.63	0.65	0.68	0.71	0.76	0.78

Use this sprocket and rpm only if required to obtain speed ratio or to meet diameter limitations. See Engineering Section II-5, Sprocket Diameter — Speed, on page 178.



# XL (0.200 Inch Pitch) PowerGrip® Power Rating Table – 0.375 Inch Belt Width

RPM of Faster Shaft	Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)												
	10XL 0.637	11XL 0.700	12XL 0.764	14XL 0.891	15XL 0.955	16XL 1.019	18XL 1.146	20XL 1.273	21XL 1.337	22XL 1.401	24XL 1.528	28XL 1.783	30XL 1.910
950	0.055	0.061	0.066	0.077	0.083	0.089	0.100	0.11	0.12	0.12	0.13	0.15	0.17
1160	0.068	0.074	0.081	0.095	0.10	0.11	0.12	0.14	0.14	0.15	0.16	0.19	0.20
1425	0.083	0.091	0.100	0.12	0.12	0.13	0.15	0.17	0.17	0.18	0.20	0.23	0.25
1750	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
2850	0.17	0.18	0.20	0.23	0.25	0.26	0.30	0.33	0.35	0.36	0.39	0.46	0.49
3450	0.20	0.22	0.24	0.28	0.30	0.32	0.36	0.40	0.42	0.43	0.47	0.55	0.58
100	0.006	0.006	0.007	0.008	0.009	0.009	0.010	0.012	0.012	0.013	0.014	0.016	0.017
200	0.012	0.013	0.014	0.016	0.017	0.019	0.021	0.023	0.024	0.026	0.028	0.033	0.035
300	0.017	0.019	0.021	0.024	0.026	0.028	0.031	0.035	0.037	0.038	0.042	0.049	0.052
400	0.023	0.026	0.028	0.033	0.035	0.037	0.042	0.047	0.049	0.051	0.056	0.065	0.070
500	0.029	0.032	0.035	0.041	0.044	0.047	0.052	0.058	0.061	0.064	0.070	0.082	0.087
600	0.035	0.038	0.042	0.049	0.052	0.056	0.063	0.070	0.073	0.077	0.084	0.098	0.10
700	0.041	0.045	0.049	0.057	0.061	0.065	0.073	0.082	0.086	0.090	0.098	0.11	0.12
800	0.047	0.051	0.056	0.065	0.070	0.075	0.084	0.093	0.098	0.10	0.11	0.13	0.14
900	0.052	0.058	0.063	0.073	0.079	0.084	0.094	0.10	0.11	0.12	0.13	0.15	0.16
1000	0.058	0.064	0.070	0.082	0.087	0.093	0.10	0.12	0.12	0.13	0.14	0.16	0.17
1100	0.064	0.070	0.077	0.090	0.096	0.10	0.12	0.13	0.13	0.14	0.15	0.18	0.19
1200	0.070	0.077	0.084	0.098	0.10	0.11	0.13	0.14	0.15	0.15	0.17	0.20	0.21
1300	0.076	0.083	0.091	0.11	0.11	0.12	0.14	0.15	0.16	0.17	0.18	0.21	0.23
1400	0.082	0.090	0.098	0.11	0.12	0.13	0.15	0.16	0.17	0.18	0.20	0.23	0.24
1500	0.087	0.096	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.21	0.24	0.26
1600	0.093	0.10	0.11	0.13	0.14	0.15	0.17	0.19	0.20	0.20	0.22	0.26	0.28
1700	0.099	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
1800	0.10	0.12	0.13	0.15	0.16	0.17	0.19	0.21	0.22	0.23	0.25	0.29	0.31
2000	0.12	0.13	0.14	0.16	0.17	0.19	0.21	0.23	0.24	0.26	0.28	0.32	0.35
2200	0.13	0.14	0.15	0.18	0.19	0.20	0.23	0.25	0.27	0.28	0.31	0.36	0.38
2400	0.14	0.15	0.17	0.20	0.21	0.22	0.25	0.28	0.29	0.31	0.33	0.39	0.41
2600	0.15	0.17	0.18	0.21	0.23	0.24	0.27	0.30	0.32	0.33	0.36	0.42	0.45
2800	0.16	0.18	0.20	0.23	0.24	0.26	0.29	0.32	0.34	0.36	0.39	0.45	0.48
3000	0.17	0.19	0.21	0.24	0.26	0.28	0.31	0.35	0.36	0.38	0.41	0.48	0.51
3200	0.19	0.20	0.22	0.26	0.28	0.30	0.33	0.37	0.39	0.40	0.44	0.51	0.54
3400	0.20	0.22	0.24	0.28	0.30	0.31	0.35	0.39	0.41	0.43	0.47	0.54	0.58
3600	0.21	0.23	0.25	0.29	0.31	0.33	0.37	0.41	0.43	0.45	0.49	0.57	0.61
3800	0.22	0.24	0.26	0.31	0.33	0.35	0.39	0.44	0.46	0.48	0.52	0.60	0.64
4000	0.23	0.25	0.28	0.32	0.35	0.37	0.41	0.46	0.48	0.50	0.54	0.63	0.67
4200	0.24	0.27	0.29	0.34	0.36	0.39	0.43	0.48	0.50	0.52	0.57	0.66	0.70
4400	0.26	0.28	0.31	0.35	0.38	0.40	0.45	0.50	0.52	0.55	0.59	0.68	0.73
4600	0.27	0.29	0.32	0.37	0.40	0.42	0.47	0.52	0.55	0.57	0.62	0.71	0.76
4800	0.28	0.31	0.33	0.39	0.41	0.44	0.49	0.54	0.57	0.59	0.64	0.74	0.79
5000	0.29	0.32	0.35	0.40	0.43	0.46	0.51	0.56	0.59	0.62	0.67	0.77	0.81
5500					0.47	0.50	0.56	0.62	0.65	0.67	0.73	0.83	0.88
6000					0.51	0.54	0.61	0.67	0.70	0.73	0.79	0.89	0.94
6500					0.55	0.59	0.65	0.72	0.75	0.78	0.84	0.95	1.00
7000					0.59	0.63	0.70	0.77	0.80	0.83	0.89	1.01	1.06
7500					0.63	0.67	0.74	0.81	0.85	0.88	0.94	1.06	1.10
8000							0.79	0.86	0.89	0.93	0.99	1.10	1.15
8500							0.83	0.90	0.94	0.97	1.03	1.14	1.18
9000							0.87	0.94	0.98	1.01	1.08	1.18	1.22
9500							0.91	0.98	1.02	1.05	1.11	1.21	1.24
10000							0.94	1.02	1.06	1.09	1.15	1.23	1.26

Use this sprocket and rpm only if required to obtain speed ratio or to meet diameter limitations. See Engineering Section II-5, Sprocket Diameter — Speed, on page 178.





















## Introduction

Long Length synchronous belting is a cost effective, low maintenance drive alternative that is especially suited for linear movement and positioning applications. Long Length belting is available in a wide variety of belt pitches and constructions. Applications as diverse as automated door openers, product conveying systems, positioning devices, and office equipment are possible using the different pitches and constructions available.

## Long Length Belting Designations

Poly Chain® GT® Carbon®, PowerGrip®, and Synchro-Power® long length belting is specified using width and pitch codes, a LL prefix, and omits the length code. An ST suffix may also be used to indicate a steel tensile cord construction. For example, 8mm pitch PowerGrip® GT2 belting, 50mm wide, with steel tensile cords, would be designated LL8MR50ST.

## Long Length Belting Product Listing

Standard Long Length belting is available in 8mm and 14mm pitch Poly Chain® GT® Carbon™, 2mm, 3mm, 5mm, and 8mm PowerGrip® GT2; 3mm, 5mm, 8mm, and 14mm PowerGrip® HTD®; MXL, XL, L, and H PowerGrip® Timing. Available large pitch PowerGrip® Long Length belting is listed on the next page.

**PowerGrip® GT®2 Long Length Belting**

5mm-8mm Pitch - Fiberglass Tensile			
Part No.	Product No.	Width (mm)	Net wt./ft (lb)
LL5MR09	9396-0020	9	0.01
LL5MR15	9396-0052	15	0.01
LL8MR20	9396-0029	20	0.08
LL8MR30	9396-0030	30	0.13
LL8MR50	9396-0031	50	0.21
LL8MR85	9396-0032	85	0.36

5mm-8mm Pitch - Steel Tensile			
Part No.	Product No.	Width (mm)	Net wt./ft (lb)
LL5MR15ST	9396-10043	15	0.18
LL5MR25ST	9396-40417	25	0.23
LL8MR20ST	9396-10049	20	0.29
LL8MR30ST	9396-10050	30	0.37
LL8MR50ST	9396-40433	50	0.53

**PowerGrip® HTD® Long Length Belting**

5mm-8mm-14mm Pitch - Fiberglass Tensile			
Part No.	Product No.	Width (mm)	Net wt./ft (lb)
LL5M09	9308-0045	9	0.01
LL5M15	9308-0033	15	0.01
LL5M25	9308-0025	25	0.05
LL8M20	9308-0001	20	0.08
LL8M30	9308-0004	30	0.13
LL8M50	9308-0005	50	0.21
LL8M85	9308-0006	85	0.36
LL14M40	9308-10009	40	0.26
LL14M55	9308-10020	55	0.35
LL14M85	9308-10057	85	0.55

14mm Pitch - Steel Tensile			
Part No.	Product No.	Width (mm)	Net wt./ft (lb)
LL14M40ST	9308-10009	40	0.26
LL14M55ST	9308-10020	55	0.35
LL14M85ST	9308-10057	85	0.55

**PowerGrip® Timing—Long Length Belting**

1/5" Pitch (0.200"/XL)—Fiberglass Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL025XL	9314-0001	1/4	0.01
LL037XL	9314-0002	3/8	0.01
LL050XL	9314-2012	1/2	0.03

1/5" Pitch (0.200"/XL)—Steel Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL025XLST	9314-10028	1/4	0.06
LL037XLST	9314-10029	3/8	0.07
LL050XLST	9314-10030	1/2	0.08

3/8" Pitch (0.375"/L)—Fiberglass Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL037L	9314-2089	3/8	0.02
LL050L	9314-0004	1/2	0.02
LL075L	9314-0007	3/4	0.04
LL100L	9314-0015	1	0.05

3/8" Pitch (0.375"/L)—Steel Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL050LST	9314-10035	1/2	0.16
LL075LST	9314-10036	3/4	0.19

1/2" Pitch (0.500"/H)—Fiberglass Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL050H	9314-0003	1/2	0.04
LL075H	9314-0006	3/4	0.06
LL100H	9314-0008	1	0.12
LL150H	9314-0017	1 1/2	0.12
LL200H	9314-0021	2	0.16
LL300H	9314-0025	3	0.24

1/2" Pitch (0.500")—Steel Tensile			
Part No.	Product No.	Width (in)	Net wt./ft (lb)
LL075HST	9314-10011	3/4	0.22
LL100HST	9314-10037	1	0.25

**NOTE:** Clamping plate hardware is available on a made-to-order basis. Contact Made-To-Order Metals.







Gates PowerGrip® Twin Power® Belts have teeth on both sides to provide synchronization from both driving surfaces. This configuration accommodates unique drive designs such as multipoint drives, shaft rotation reversal, and serpentine drives. Twin Power Belts are similar in construction to regular synchronous belts, including nylon-faced teeth on both sides.

## Specifying Twin Power® Belts

PowerGrip Twin Power Belts are specified using the same code as standard PowerGrip belts, except that they include a TP prefix. Thus, a Twin Power PowerGrip GT®2 belt with 8mm pitch, 1600mm pitch length and 30mm width is specified as TP1600-8MGT-30. Similarly, a Twin Power PowerGrip Timing belt with an L pitch, 24" pitch length, and 1" width is specified as TP240L100. A listing of available sizes, both Stock and Standard/Non-stock, are shown below. Standard/Non-stock belts are not stocked products, but no minimum order quantity is required. Standard/Non-stock belts may require manufacturing lead time. Contact your local Gates representative for availability.

PowerGrip GT2 Twin Power belts are available in 3mm and 5mm pitches as Standard/Non-stock.

## Twin Power Drive Selection

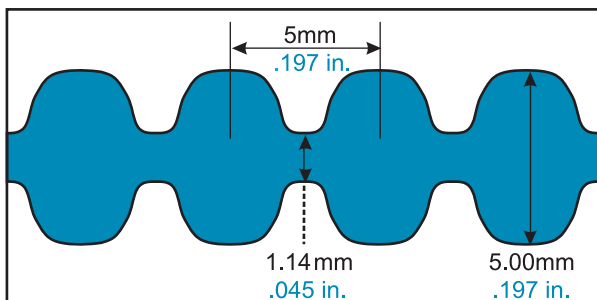
Gates Twin Power Belts can transmit 100% of their maximum rated load capacity from either side of the belt or in combination where the sum of the loads carried by both sides of the belt does not exceed the maximum rating of the belt. For example, a Twin Power Belt rated at 12 HP could be used with 50% of the maximum rated load on one side and 50% on the other; or 90% on one side and 10% on the other.

5mm Pitch PowerGrip® GT®2 Twin Power® Belt Lengths (Standard/Non-stock)

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP5MR-400	400	15.75	80
TP5MR-425	425	16.73	85
TP5MR-450	450	17.72	90
TP5MR-500	500	19.69	100
TP5MR-535	535	21.06	107
TP5MR-565	565	22.24	113
TP5MR-575	575	22.64	115
TP5MR-580	580	22.83	116
TP5MR-600	600	23.62	120
TP5MR-625	625	24.61	125
TP5MR-650	650	25.59	130
TP5MR-700	700	27.56	140
TP5MR-710	710	27.95	142
TP5MR-740	740	29.13	148
TP5MR-745	745	29.33	149
TP5MR-750	750	29.53	150
TP5MR-765	765	30.12	153
TP5MR-790	790	31.10	158
TP5MR-800	800	31.50	160
TP5MR-815	815	32.09	163
TP5MR-830	830	32.68	166
TP5MR-835	835	32.87	167
TP5MR-850	850	33.46	170
TP5MR-870	870	34.25	174
TP5MR-890	890	35.04	178
TP5MR-900	900	35.43	180
TP5MR-925	925	36.42	185
TP5MR-950	950	37.40	190
TP5MR-975	975	38.39	195
TP5MR-985	985	38.78	197
TP5MR-1000	1000	39.37	200

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP5MR-1050	1050	41.34	210
TP5MR-1115	1115	43.90	223
TP5MR-1125	1125	44.29	225
TP5MR-1150	1150	45.28	230
TP5MR-1195	1195	47.05	239
TP5MR-1250	1250	49.21	250
TP5MR-1270	1270	50.00	254
TP5MR-1295	1295	50.98	259
TP5MR-1300	1300	51.18	260
TP5MR-1375	1375	54.13	275
TP5MR-1420	1420	55.91	284
TP5MR-1450	1450	57.09	290
TP5MR-1575	1575	62.01	315
TP5MR-1595	1595	62.80	319
TP5MR-1635	1635	64.37	327
TP5MR-1690	1690	66.54	338
TP5MR-1790	1790	70.47	358
TP5MR-1800	1800	70.87	360
TP5MR-1895	1895	74.61	379
TP5MR-1945	1945	76.57	389
TP5MR-2000	2000	78.74	400
TP5MR-2110	2110	83.07	422
TP5MR-2250	2250	88.58	450
TP5MR-2525	2525	99.41	505
TP5MR-2760	2760	108.66	552
TP5MR-3120	3120	122.83	624
TP5MR-3170	3170	124.80	634
TP5MR-3200	3200	125.98	640
TP5MR-3430	3430	135.04	686
TP5MR-3800	3800	149.61	760

5M PowerGrip® GT®2 Twin Power® – Reference Dimensions



5MR Twin Power® Belt Widths (Standard/Non-stock)

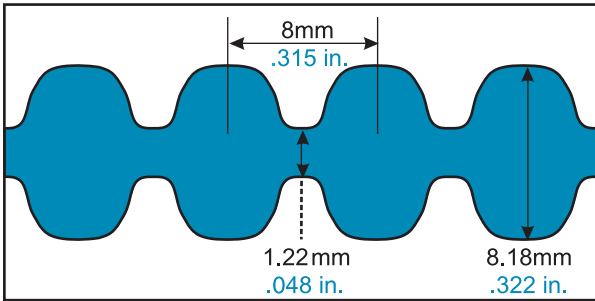
Belt Width Code	Belt Width	
	(mm)	(in)
09	9	0.354
15	15	0.591
25	25	0.984

## 8mm Pitch PowerGrip® GT®2 Twin Power® Stock Belt Lengths

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP560-8MGT-20	560	22.05	70
TP600-8MGT-20	600	23.62	75
TP640-8MGT-20	640	25.20	80
TP720-8MGT-20	720	28.35	90
TP800-8MGT-20	800	31.50	100
TP840-8MGT-20	840	33.07	105
TP880-8MGT-20	880	34.65	110
TP920-8MGT-20	920	36.22	115
TP960-8MGT-20	960	37.80	120
TP1040-8MGT-20	1040	40.94	130
TP1064-8MGT-20	1064	41.89	133
TP1120-8MGT-20	1120	44.09	140
TP1160-8MGT-20	1160	45.67	146
TP1200-8MGT-20	1200	47.24	150
TP1224-8MGT-20	1224	48.19	153

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP1280-8MGT-20	1280	50.39	160
TP1440-8MGT-20	1440	56.69	180
TP1512-8MGT-20	1512	59.53	189
TP1600-8MGT-20	1600	62.99	200
TP1760-8MGT-20	1760	69.29	220
TP1800-8MGT-20	1800	70.87	225
TP2000-8MGT-20	2000	78.74	250
TP2200-8MGT-20	2200	86.61	275
TP2400-8MGT-20	2400	94.49	300
TP2600-8MGT-20	2600	102.36	325
TP2800-8MGT-20	2800	110.24	350
TP3048-8MGT-20	3048	120.00	381
TP3280-8MGT-20	3280	129.13	410
TP3600-8MGT-20	3600	141.73	450
TP4400-8MGT-20	4400	173.23	550

## 8M PowerGrip® GT®2 Twin Power® – Reference Dimensions



## 8MGT Twin Power® Belt Widths

Belt Width Code	Belt Width	
	(mm)	(in)
20	20	0.787
30	30	1.181
50	50	1.969
85	85	3.346

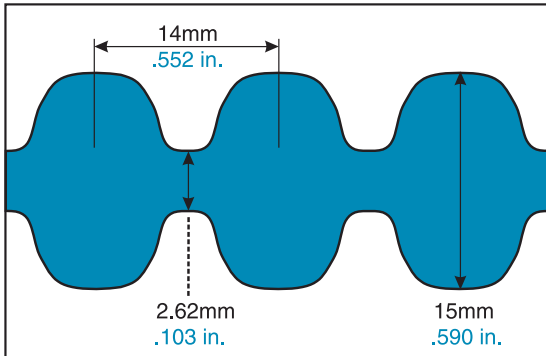
## 14mm Pitch PowerGrip® GT®2 Twin Power® Stock Belt Lengths

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP966-14MGT	966	38.03	69
TP1190-14MGT	1190	46.85	85
TP1400-14MGT	1400	55.12	100
TP1610-14MGT	1610	63.39	115
TP1778-14MGT	1778	70.00	127
TP1890-14MGT	1890	74.41	135
TP2100-14MGT	2100	82.68	150
TP2310-14MGT	2310	90.94	165
TP2450-14MGT	2450	96.46	175
TP2590-14MGT	2590	101.97	185
TP2800-14MGT	2800	110.24	200

Part No.	Pitch Length		No. of Teeth
	(mm)	(in)	
TP3150-14MGT	3150	124.02	225
TP3360-14MGT	3360	132.28	240
TP3500-14MGT	3500	137.80	250
TP3850-14MGT	3850	151.57	275
TP4326-14MGT	4326	170.31	309
TP4578-14MGT	4578	180.24	327
TP4956-14MGT*	4956	195.12	354
TP5320-14MGT*	5320	209.45	380
TP5740-14MGT*	5740	225.98	410
TP6160-14MGT*	6160	242.52	440
TP6860-14MGT*	6860	270.08	490

\* Only available in 40, 55, and 85 mm widths

## 14M PowerGrip® GT®2 Twin Power® – Reference Dimensions



## 14MGT Twin Power® Belt Widths

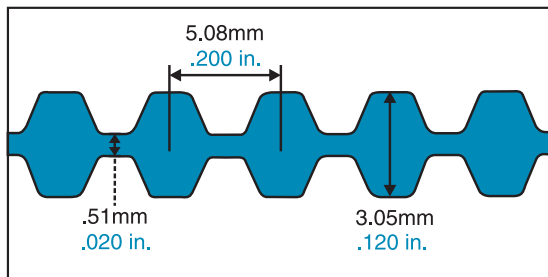
Belt Width Code	Belt Width	
	(mm)	(in)
40	40	1.575
55	55	2.165
85	85	3.346
115	115	4.528
170	170	6.693

## 1/5" (0.200") Pitch XL PowerGrip® Twin Power® Timing Belt Lengths (Standard/Non-stock)

Part No.	Pitch Length (in)	No. of Teeth
TP126XL	12.60	63
TP128XL	12.80	64
TP130XL	13.00	65
TP132XL	13.20	66
TP134XL	13.40	67
TP136XL	13.60	68
TP138XL	13.80	69
TP140XL	14.00	70
TP142XL	14.20	71
TP144XL	14.40	72
TP146XL	14.60	73
TP148XL	14.80	74
TP150XL	15.00	75
TP152XL	15.20	76
TP156XL	15.60	78
TP158XL	15.80	79
TP160XL	16.00	80
TP162XL	16.20	81
TP166XL	16.60	83
TP168XL	16.80	84
TP170XL	17.00	85
TP172XL	17.20	86
TP174XL	17.40	87
TP176XL	17.60	88
TP178XL	17.80	89
TP180XL	18.00	90
TP182XL	18.20	91
TP184XL	18.40	92
TP186XL	18.60	93
TP188XL	18.80	94
TP190XL	19.00	95
TP192XL	19.20	96
TP200XL	20.00	100
TP202XL	20.20	101
TP204XL	20.40	102
TP206XL	20.60	103
TP210XL	21.00	105
TP212XL	21.20	106
TP214XL	21.40	107
TP218XL	21.80	109
TP220XL	22.00	110
TP222XL	22.20	111
TP226XL	22.60	113
TP228XL	22.80	114
TP230XL	23.00	115
TP232XL	23.20	116
TP234XL	23.40	117
TP236XL	23.60	118
TP240XL	24.00	120
TP244XL	24.40	122
TP246XL	24.60	123
TP250XL	25.00	125
TP254XL	25.40	127
TP258XL	25.80	129

Part No.	Pitch Length (in)	No. of Teeth
TP260XL	26.00	130
TP262XL	26.20	131
TP264XL	26.40	132
TP266XL	26.60	133
TP268XL	26.80	134
TP274XL	27.40	137
TP280XL	28.00	140
TP286XL	28.60	143
TP290XL	29.00	145
TP296XL	29.60	148
TP300XL	30.00	150
TP306XL	30.60	153
TP310XL	31.00	155
TP316XL	31.60	158
TP320XL	32.00	160
TP322XL	32.20	161
TP330XL	33.00	165
TP338XL	33.80	169
TP340XL	34.00	170
TP344XL	34.40	172
TP348XL	34.80	174
TP350XL	35.00	175
TP352XL	35.20	176
TP362XL	36.20	181
TP370XL	37.00	185
TP380XL	38.00	190
TP384XL	38.40	192
TP390XL	39.00	195
TP400XL	40.00	200
TP412XL	41.20	206
TP420XL	42.00	210
TP424XL	42.40	212
TP432XL	43.20	216
TP438XL	43.80	219
TP444XL	44.40	222
TP450XL	45.00	225
TP454XL	45.40	227
TP460XL	46.00	230
TP468XL	46.80	234
TP480XL	48.00	240
TP492XL	49.20	246
TP498XL	49.80	249
TP500XL	50.00	250
TP506XL	50.60	253
TP524XL	52.40	262
TP570XL	57.00	285
TP580XL	58.00	290
TP592XL	59.20	296
TP612XL	61.20	306
TP630XL	63.00	315
TP672XL	67.20	336
TP690XL	69.00	345
TP770XL	77.00	385
TP850XL	85.00	425

### XL PowerGrip® Twin Power® – Reference Dimensions



### XL Twin Power® Belt Widths (Standard/Non-stock)

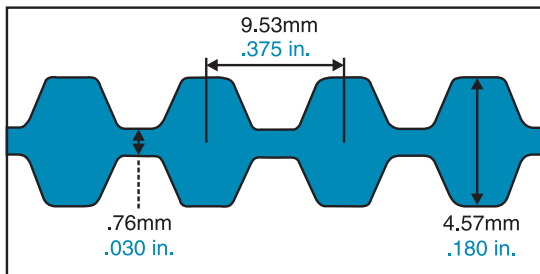
Belt Width Code	Belt Width (in)
025	0.250
037	0.375

## 3/8" (0.375") Pitch L PowerGrip® Twin Power® Timing Stock Belt Lengths

Part No.	Pitch Length (in)	No. of Teeth
TP150L	15.00	40
TP154L	15.38	41
TP158L	15.75	42
TP165L	16.50	44
TP173L	17.25	46
TP176L	17.63	47
TP187L	18.75	50
TP195L	19.50	52
TP199L	19.88	53
TP210L	21.00	56
TP218L	21.75	58
TP225L	22.50	60
TP240L	24.00	64
TP248L	24.75	66
TP255L	25.50	68
TP263L	26.25	70
TP270L	27.00	72
TP285L	28.50	76
TP300L	30.00	80

Part No.	Pitch Length (in)	No. of Teeth
TP315L	31.50	84
TP322L	32.25	86
TP345L	34.50	92
TP367L	36.75	98
TP375L	37.50	100
TP390L	39.00	104
TP420L	42.00	112
TP446L	44.63	119
TP450L	45.00	120
TP480L	48.00	128
TP510L	51.00	136
TP540L	54.00	144
TP566L	56.63	151
TP600L	60.00	160
TP660L	66.00	176
TP817L	81.75	218
TP900L	90.00	240
TP945L	94.50	252

### L PowerGrip® Twin Power® – Reference Dimensions



### L Twin Power® Belt Widths

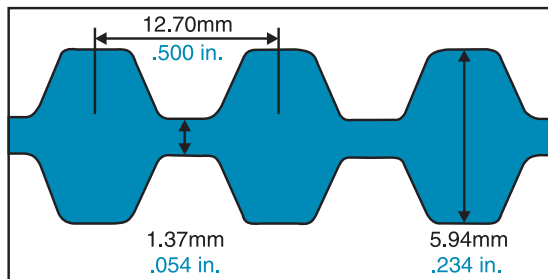
Belt Width Code	Belt Width (in)
050	0.500
075	0.750
100	1.000

## 1/2" (0.500") Pitch H PowerGrip® Twin Power® Timing Stock Belt Lengths

Part No.	Pitch Length (in)	No. of Teeth
TP210H	21.00	42
TP220H	22.00	44
TP225H	22.50	45
TP230H	23.00	46
TP240H	24.00	48
TP270H	27.00	54
TP300H	30.00	60
TP315H	31.50	63
TP320H	32.00	64
TP330H	33.00	66
TP340H	34.00	68
TP350H	35.00	70
TP360H	36.00	72
TP370H	37.00	74
TP390H	39.00	78
TP400H	40.00	80
TP410H	41.00	82
TP415H	41.50	83
TP420H	42.00	84
TP445H	44.50	89
TP450H	45.00	90
TP455H	45.50	91
TP465H	46.50	93
TP480H	48.00	96
TP490H	49.00	98
TP495H	49.50	99
TP510H	51.00	102
TP525H	52.50	105
TP540H	54.00	108
TP555H	55.50	111
TP560H	56.00	112
TP570H	57.00	114
TP585H	58.50	117

Part No.	Pitch Length (in)	No. of Teeth
TP600H	60.00	120
TP605H	60.50	121
TP630H	63.00	126
TP645H	64.50	129
TP655H	65.50	131
TP660H	66.00	132
TP700H	70.00	140
TP730H	73.00	146
TP750H	75.00	150
TP775H	77.50	155
TP780H	78.00	156
TP800H	80.00	160
TP820H	82.00	164
TP840H	84.00	168
TP850H	85.00	170
TP900H	90.00	180
TP960H	96.00	192
TP1000H	100.00	200
TP1100H	110.00	220
TP1140H	114.00	228
TP1180H	118.00	236
TP1250H	125.00	250
TP1400H	140.00	280
TP1510H	151.00	302
TP1550H	155.00	310
TP1645H	164.50	329
TP1680H	168.00	336
TP1700H	170.00	340
TP2090H	209.00	418
TP2100H	210.00	420
TP2120H	212.00	424
TP2330H	233.00	466

### H PowerGrip® Twin Power® – Reference Dimensions



### H Twin Power® Belt Widths

Belt Width Code	Belt Width (in)
75	0.75
100	1.00
150	1.50
200	2.00
300	3.00

To select a Gates PowerGrip® Twin Power® Belt drive, you need to know only five facts:

1. DriveN horsepower requirements.
2. RPM of the driveR shaft.
3. RPM of the driveN shafts.
4. Approximate geometry for the drive.
5. Hours per day operation.

## Step 1 Determine Design Horsepower

**Design Horsepower = (Service Factor) x (Horsepower Requirement)**

- A. To calculate the **design horsepower**, it is necessary to determine the **service factor** for each type of driveN unit. Using the Service Factor Chart on Page 11, determine the type of driveR machine.
- B. Using this chart, determine the **service factor** for each driveN machine, based on the type of driveN machine and the type of service. Add any additional service factors required. Drives with multiple function driveN machines must have an appropriate service factor applied to each type of driveN machine.
- C. Multiply the horsepower requirement of the drive by the service factor selected. This yields the **design horsepower** for the drive.
- D. Add up the driveN loads. On multiple function driveN machines, add up the design horsepower for each driveN unit to determine the total horsepower for the drive.

## Step 2 Select Belt Pitch

Locate the design horsepower along the bottom of the Belt Pitch Selection Guide on Page 7. Read up from the RPM of the smaller sprocket (faster shaft). The belt pitch indicated in the area surrounding the point of intersection is the one that should be used. If the point of intersection falls outside any specific area, contact Gates Product Application Engineering. If the point is near one of the lines, a good drive can be designed with the belt pitch on either side of the line. Design drives using both belt pitches and select the most economical drive consistent with the other requirements.

## Step 3 Select Sprockets and Determine Belt Length

A typical Twin Power Belt application will have three or more sprockets; although in some drives, one of the driveN sprockets may be unloaded and act only as an idler. It may be possible to use the Drive Selection Table as an aid to determine the required sprockets.

- A. For drives with standard motor speeds, refer to the appropriate motor speed column. Read down the

column and locate the driveN machine speed nearest the requirements for each driveN sprocket using a common size motor sprocket.

- B. For all other speeds:

1. Find the speed ratio by dividing the RPM of the faster shaft by the RPM of the slower shaft for each driveN sprocket in the drive.
2. Read down the speed ratio column and locate the speed ratio nearest the requirements. Select a driveN sprocket using a common size driveN sprocket which yields the speeds nearest the requirements.

- C. Required belt lengths are most easily determined by measuring directly from a drawing of the drive layout. For computer aided assistance in determining the correct belt length, contact Gates Product Application Engineering.

## Step 4 Calculate Horsepower Rating

Belt Width Selection tables on pages 125 through 130 show the Horsepower Ratings. Each table represents one specific pitch belt. Read down the first column to the speed of the faster shaft, then across to the column headed by the small sprocket rotating at this speed. This value is the Horsepower Rating. Multiply the Horsepower Rating by the Width Multipliers to determine the Horsepower Rating for various width belts.

## Step 5 Select Belt Width

- A. Locate the critical sprocket in the drive. This sprocket may be either the smaller diameter sprocket or a larger diameter sprocket with less than six teeth in mesh, depending on the loads transmitted by each sprocket

1. Determine the number of teeth in mesh using the formula below:

$$\text{Teeth in Mesh} = \frac{\text{Angle of Sprocket Contact}}{360} \times \text{Number of Sprocket Teeth}$$

2. Select the appropriate teeth in mesh factor (K<sub>tm</sub>) from Page 175.
3. Correct the horsepower rating by multiplying the teeth in mesh factor (K<sub>tm</sub>) by the horsepower rating from Step 4.
4. Repeat this procedure for each sprocket to locate the critical sprocket in the drive. Select the proper belt width on the basis of the critical sprocket parameters.

**Step 6 Installation and Takeup**

Because of its high resistance to elongation, there is no need to retension PowerGrip® Twin Power® Belt drives. However, some adjustments must be provided when installing timing belt drives, as with nearly all power transmission methods, because of manufacturing tolerances, wear of pressure surfaces and tensioning requirements. Center distance adjustment values are shown in the Center Distance Allowance Table on Page 182.

**Step 7 Check and Specify Stock Drive Components**

- A. Check the sprockets selected against the design requirements using the dimensions given in the Sprocket Specifications Tables on Pages 131 through 151.
- B. Using the Sprocket Specifications Tables, determine the **bushing size** to use with each sprocket. Check the **bore range** against the design requirements.
- C. Specify all stock components using proper designation for the belt, sprockets and bushings.

**NOTE:** Reference page 6 for data collection worksheet and page 174 for information on surveying multipoint drive layouts.

**5M PowerGrip® GT®2 Twin Power® Rating Table**

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)																								
	18	19	20	21	22	23	24	25	26	28	30	32	34	36	38	40	44	45	48	50	52	56	60	64	68
10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
20	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08
40	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.11	0.12	0.13	0.14	0.15
60	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.16	0.18	0.19	0.21	0.22
100	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.17	0.18	0.19	0.21	0.22	0.24	0.25	0.26	0.29	0.31	0.33	0.35
200	0.10	0.11	0.12	0.14	0.15	0.16	0.17	0.18	0.20	0.22	0.24	0.27	0.29	0.31	0.33	0.36	0.40	0.41	0.45	0.47	0.49	0.54	0.58	0.62	0.67
300	0.14	0.16	0.18	0.19	0.21	0.23	0.25	0.26	0.28	0.31	0.35	0.38	0.42	0.45	0.48	0.51	0.58	0.60	0.64	0.68	0.71	0.77	0.84	0.90	0.96
400	0.18	0.20	0.22	0.25	0.27	0.29	0.31	0.34	0.36	0.40	0.45	0.49	0.53	0.58	0.62	0.66	0.75	0.77	0.83	0.88	0.92	1.00	1.08	1.17	1.25
500	0.22	0.24	0.27	0.30	0.33	0.35	0.38	0.41	0.44	0.49	0.54	0.60	0.65	0.70	0.76	0.81	0.91	0.94	1.02	1.07	1.12	1.22	1.33	1.43	1.53
600	0.25	0.28	0.32	0.35	0.38	0.41	0.45	0.48	0.51	0.57	0.64	0.70	0.76	0.83	0.89	0.95	1.08	1.11	1.20	1.26	1.32	1.44	1.56	1.68	1.80
800	0.31	0.36	0.40	0.44	0.49	0.53	0.57	0.61	0.65	0.74	0.82	0.90	0.98	1.07	1.15	1.23	1.39	1.43	1.55	1.63	1.70	1.86	2.02	2.17	2.32
1000	0.37	0.43	0.48	0.53	0.58	0.64	0.69	0.74	0.79	0.89	1.00	1.10	1.20	1.30	1.40	1.49	1.69	1.74	1.89	1.98	2.08	2.27	2.46	2.65	2.83
1200	0.43	0.49	0.56	0.62	0.68	0.74	0.80	0.86	0.92	1.04	1.16	1.28	1.40	1.52	1.64	1.75	1.98	2.04	2.21	2.33	2.44	2.66	2.89	3.11	3.33
1400	0.49	0.56	0.63	0.70	0.77	0.84	0.91	0.98	1.05	1.19	1.33	1.47	1.60	1.74	1.87	2.00	2.27	2.34	2.53	2.66	2.79	3.05	3.31	3.56	3.81
1600	0.54	0.62	0.70	0.78	0.86	0.94	1.02	1.10	1.18	1.33	1.49	1.64	1.80	1.95	2.10	2.25	2.55	2.62	2.85	2.99	3.14	3.43	3.71	4.00	4.28
1800	0.59	0.68	0.77	0.86	0.95	1.03	1.12	1.21	1.30	1.47	1.65	1.82	1.99	2.16	2.32	2.49	2.82	2.91	3.15	3.31	3.47	3.80	4.11	4.43	4.74
2000	0.64	0.74	0.83	0.93	1.03	1.13	1.23	1.32	1.42	1.61	1.80	1.99	2.17	2.36	2.54	2.73	3.09	3.18	3.45	3.63	3.80	4.15	4.50	4.84	5.18
2400	0.73	0.85	0.96	1.08	1.19	1.31	1.42	1.53	1.65	1.87	2.10	2.32	2.54	2.75	2.97	3.18	3.61	3.72	4.03	4.24	4.44	4.85	5.25	5.65	6.04
2800	0.81	0.95	1.08	1.21	1.35	1.48	1.61	1.74	1.87	2.13	2.38	2.63	2.89	3.14	3.38	3.63	4.11	4.23	4.59	4.82	5.05	5.52	5.97	6.41	6.85
3200	0.89	1.05	1.19	1.34	1.49	1.64	1.79	1.93	2.08	2.37	2.66	2.94	3.22	3.50	3.78	4.05	4.59	4.72	5.12	5.38	5.64	6.15	6.65	7.14	7.61
3600	0.97	1.14	1.30	1.47	1.64	1.80	1.96	2.12	2.29	2.61	2.92	3.24	3.55	3.86	4.16	4.46	5.05	5.20	5.63	5.92	6.20	6.75	7.29	7.82	8.33
4000	1.04	1.23	1.41	1.59	1.77	1.95	2.13	2.31	2.48	2.83	3.18	3.52	3.86	4.20	4.53	4.85	5.49	5.65	6.12	6.43	6.73	7.32	7.90	8.45	8.99
5000	1.20	1.43	1.65	1.87	2.09	2.30	2.52	2.73	2.95	3.37	3.78	4.19	4.59	4.99	5.38	5.77	6.51	6.70	7.24	7.59	7.93	8.60	9.23	9.84	10.4
6000	1.34	1.60	1.86	2.12	2.37	2.62	2.88	3.12	3.37	3.85	4.33	4.80	5.26	5.71	6.15	6.58	7.41	7.61	8.20	8.57	8.94	9.64	10.3	10.9	
8000	1.56	1.89	2.21	2.54	2.86	3.17	3.48	3.78	4.09	4.68	5.26	5.81	6.35	6.88	7.38	7.86	8.76	8.97	9.57	9.94					
10000	1.69	2.08	2.46	2.84	3.22	3.58	3.94	4.28	4.63	5.29	5.93	6.54	7.11	7.65	8.15	8.62									
12000	1.75	2.19	2.61	3.04	3.45	3.84	4.23	4.61	4.98	5.67	6.33	6.93													
14000	1.72	2.20	2.65	3.10	3.54	3.95	4.36	4.74	5.11	5.79															

Shaded area indicates drive conditions where reduced service life can be expected.

Corrected Horsepower Rating = [Base Rating] x [Belt Width Multiplier]

**5M PowerGrip® GT®2 Width Multipliers**

Belt Width (mm)	Width Multiplier
9	1.00
15	1.67
25	2.78







# 14M PowerGrip® GT®2 Twin Power® Rating Table

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)																								
	28 4.912	29 5.088	30 5.263	31 5.439	32 5.614	33 5.790	34 5.965	35 6.141	36 6.316	37 6.492	38 6.667	39 6.842	40 7.018	42 7.369	44 7.720	46 8.071	48 8.421	50 8.772	52 9.123	56 9.825	60 10.527	64 11.229	68 11.930	72 12.632	80 14.036
10	0.56	0.58	0.60	0.63	0.65	0.67	0.70	0.72	0.74	0.76	0.79	0.81	0.83	0.88	0.92	0.97	1.01	1.06	1.10	1.19	1.28	1.37	1.46	1.55	1.72
20	1.04	1.09	1.13	1.18	1.22	1.27	1.31	1.35	1.40	1.44	1.48	1.53	1.57	1.66	1.74	1.83	1.91	2.00	2.08	2.25	2.42	2.59	2.75	2.92	3.25
40	1.95	2.04	2.12	2.21	2.29	2.37	2.46	2.54	2.62	2.70	2.79	2.87	2.95	3.11	3.27	3.44	3.60	3.76	3.92	4.24	4.55	4.87	5.18	5.49	6.11
60	2.81	2.94	3.06	3.18	3.30	3.42	3.54	3.66	3.78	3.90	4.02	4.14	4.26	4.49	4.73	4.96	5.19	5.43	5.66	6.12	6.58	7.03	7.49	7.94	8.83
100	4.44	4.64	4.83	5.02	5.22	5.41	5.60	5.79	5.98	6.17	6.36	6.55	6.74	7.12	7.49	7.86	8.23	8.60	8.97	9.71	10.4	11.2	11.9	12.6	14.0
200	8.21	8.58	8.94	9.31	9.67	10.0	10.4	10.7	11.1	11.5	11.8	12.2	12.5	13.2	13.9	14.6	15.3	16.0	16.7	18.1	19.4	20.8	22.1	23.5	26.1
300	11.7	12.3	12.8	13.3	13.8	14.3	14.9	15.4	15.9	16.4	16.9	17.4	17.9	19.0	20.0	21.0	22.0	23.0	23.9	25.9	27.9	29.8	31.7	33.6	37.4
400	15.1	15.8	16.4	17.1	17.8	18.5	19.1	19.8	20.5	21.1	21.8	22.5	23.1	24.4	25.7	27.0	28.3	29.6	30.9	33.4	35.9	38.4	40.9	43.4	48.3
500	18.3	19.1	20.0	20.8	21.6	22.4	23.3	24.1	24.9	25.7	26.5	27.3	28.1	29.7	31.3	32.9	34.5	36.0	37.6	40.7	43.7	46.8	49.8	52.8	58.7
600	21.4	22.4	23.4	24.4	25.3	26.3	27.3	28.2	29.2	30.1	31.1	32.0	33.0	34.8	36.7	38.6	40.4	42.2	44.1	47.7	51.3	54.8	58.4	61.9	68.8
800	27.5	28.7	30.0	31.2	32.5	33.7	35.0	36.2	37.4	38.7	39.9	41.1	42.3	44.7	47.1	49.5	51.9	54.2	56.6	61.2	65.8	70.3	74.8	79.3	88.0
870	29.5	30.9	32.2	33.6	34.9	36.2	37.6	38.9	40.2	41.5	42.9	44.2	45.5	48.1	50.6	53.2	55.7	58.3	60.8	65.8	70.7	75.6	80.4	85.1	94.5
1000	33.2	34.8	36.3	37.8	39.3	40.8	42.3	43.8	45.3	46.8	48.3	49.8	51.2	54.2	57.1	59.9	62.8	65.7	68.5	74.1	79.6	85.0	90.4	95.7	106.2
1160	37.7	39.4	41.1	42.9	44.6	46.3	48.0	49.7	51.4	53.1	54.8	56.5	58.1	61.5	64.7	68.0	71.2	74.5	77.6	84.0	90.2	96.3	102.3	108.3	119.9
1200	38.7	40.6	42.3	44.1	45.9	47.7	49.4	51.2	52.9	54.7	56.4	58.1	59.8	63.2	66.6	70.0	73.3	76.6	79.9	86.4	92.8	99.0	105.2	111.3	123.2
1400	44.1	46.2	48.2	50.2	52.3	54.3	56.3	58.3	60.3	62.2	64.2	66.2	68.1	72.0	75.8	79.6	83.4	87.1	90.8	98.1	105.3	112.3	119.2	126.0	139.2
1600	49.3	51.6	53.9	56.1	58.4	60.7	62.9	65.1	67.3	69.6	71.7	73.9	76.1	80.4	84.7	88.9	93.1	97.2	101.3	109.4	117.2	125.0	132.5	139.8	154.0
1750	53.1	55.5	58.0	60.5	62.9	65.3	67.7	70.1	72.5	74.9	77.2	79.6	81.9	86.5	91.1	95.6	100.1	104.5	108.9	117.4	125.8	134.0	141.9	149.6	164.3
+2000	59.2	61.9	64.7	67.4	70.1	72.8	75.5	78.2	80.8	83.5	86.1	88.7	91.3	96.4	101.4	106.4	111.3	116.1	120.9	130.2	139.3	148.0	156.5		
+2400	68.5	71.7	74.9	78.0	81.2	84.3	87.3	90.4	93.4	96.5	99.4	102.4	105.3	111.1	116.8	122.4	127.9	133.3	138.6	148.8					
+2800	77.3	80.9	84.4	88.0	91.5	95.0	98.4	101.8	105.2	108.5	111.8	115.1	118.3	124.7	130.9	137.0	142.9	148.7							
+3200	85.5	89.5	93.4	97.3	101.1	104.9	108.6	112.3	116.0	119.6	123.2	126.7	130.1	136.9	143.5										
+3600	93.2	97.5	101.7	105.9	110.0	114.1	118.1	122.0	125.9	129.7	133.5	137.1													
+4000	100.4	105.0	109.5	113.9	118.2	122.5	126.7	130.8	134.8																

+ Drives within this speed range may generate an objectionable noise level. This can be reduced by using commercially available acoustical damping material in the belt guard. Contact Gates for recommendations on any drive to be installed in a noise sensitive area.

Note: 31, 33, 35, 37, 39, 42, 46 and 50 groove sprockets are only available as stock products in 40mm width.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Width Multiplier}]$$

### 14M PowerGrip® GT®2 Width Multipliers

Belt Width (mm)	Width Multiplier
40	1.00
55	1.50
85	2.50
115	3.50
170	5.32



# XL (0.200 Inch Pitch) PowerGrip® Twin Power® Rating Table

RPM of Faster Shaft	Base Rated Horsepower for Small Sprocket (Number of Grooves and Pitch Diameter, Inches)												
	10XL 0.637	11XL 0.700	12XL 0.764	14XL 0.891	15XL 0.955	16XL 1.019	18XL 1.146	20XL 1.273	21XL 1.337	22XL 1.401	24XL 1.528	28XL 1.783	30XL 1.910
950	0.034	0.038	0.041	0.048	0.051	0.055	0.062	0.069	0.072	0.075	0.082	0.096	0.10
1160	0.042	0.046	0.050	0.059	0.063	0.067	0.075	0.084	0.088	0.092	0.10	0.12	0.13
1425	0.051	0.057	0.062	0.072	0.077	0.082	0.093	0.10	0.11	0.11	0.12	0.14	0.15
1750	0.063	0.069	0.076	0.088	0.095	0.10	0.11	0.13	0.13	0.14	0.15	0.18	0.19
2850	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
3450	0.12	0.14	0.15	0.17	0.19	0.20	0.22	0.25	0.26	0.27	0.29	0.34	0.36
100	0.004	0.004	0.004	0.005	0.005	0.006	0.007	0.007	0.008	0.008	0.009	0.010	0.011
200	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.020	0.022
300	0.011	0.012	0.013	0.015	0.016	0.017	0.020	0.022	0.023	0.024	0.026	0.030	0.033
400	0.014	0.016	0.017	0.020	0.022	0.023	0.026	0.029	0.030	0.032	0.035	0.040	0.043
500	0.018	0.020	0.022	0.025	0.027	0.029	0.033	0.036	0.038	0.040	0.043	0.051	0.054
600	0.022	0.024	0.026	0.030	0.033	0.035	0.039	0.043	0.046	0.048	0.052	0.061	0.065
700	0.025	0.028	0.030	0.035	0.038	0.040	0.046	0.051	0.053	0.056	0.061	0.071	0.076
800	0.029	0.032	0.035	0.040	0.043	0.046	0.052	0.058	0.061	0.064	0.069	0.081	0.087
900	0.033	0.036	0.039	0.046	0.049	0.052	0.059	0.065	0.068	0.072	0.078	0.091	0.097
1000	0.036	0.040	0.043	0.051	0.054	0.058	0.065	0.072	0.076	0.079	0.087	0.10	0.11
1100	0.040	0.044	0.048	0.056	0.060	0.064	0.072	0.079	0.083	0.087	0.095	0.11	0.12
1200	0.043	0.048	0.052	0.061	0.065	0.069	0.078	0.087	0.091	0.095	0.10	0.12	0.13
1300	0.047	0.052	0.056	0.066	0.070	0.075	0.084	0.094	0.098	0.10	0.11	0.13	0.14
1400	0.051	0.056	0.061	0.071	0.076	0.081	0.091	0.10	0.11	0.11	0.12	0.14	0.15
1500	0.054	0.060	0.065	0.076	0.081	0.087	0.097	0.11	0.11	0.12	0.13	0.15	0.16
1600	0.058	0.064	0.069	0.081	0.087	0.092	0.10	0.12	0.12	0.13	0.14	0.16	0.17
1700	0.061	0.068	0.074	0.086	0.092	0.098	0.11	0.12	0.13	0.13	0.15	0.17	0.18
1800	0.065	0.071	0.078	0.091	0.097	0.10	0.12	0.13	0.14	0.14	0.16	0.18	0.19
2000	0.072	0.079	0.087	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.20	0.21
2200	0.079	0.087	0.095	0.11	0.12	0.13	0.14	0.16	0.17	0.17	0.19	0.22	0.24
2400	0.087	0.095	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.21	0.24	0.26
2600	0.094	0.10	0.11	0.13	0.14	0.15	0.17	0.19	0.20	0.20	0.22	0.26	0.28
2800	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.20	0.21	0.22	0.24	0.28	0.30
3000	0.11	0.12	0.13	0.15	0.16	0.17	0.19	0.21	0.22	0.24	0.26	0.30	0.32
3200	0.12	0.13	0.14	0.16	0.17	0.18	0.21	0.23	0.24	0.25	0.27	0.32	0.34
3400	0.12	0.13	0.15	0.17	0.18	0.19	0.22	0.24	0.25	0.27	0.29	0.33	0.36
3600	0.13	0.14	0.16	0.18	0.19	0.21	0.23	0.26	0.27	0.28	0.31	0.35	0.38
3800	0.14	0.15	0.16	0.19	0.20	0.22	0.24	0.27	0.28	0.30	0.32	0.37	0.40
4000	0.14	0.16	0.17	0.20	0.21	0.23	0.26	0.28	0.30	0.31	0.34	0.39	0.41
4200	0.15	0.17	0.18	0.21	0.22	0.24	0.27	0.30	0.31	0.33	0.35	0.41	0.43
4400	0.16	0.17	0.19	0.22	0.24	0.25	0.28	0.31	0.33	0.34	0.37	0.42	0.45
4600	0.17	0.18	0.20	0.23	0.25	0.26	0.29	0.32	0.34	0.35	0.38	0.44	0.47
4800	0.17	0.19	0.21	0.24	0.26	0.27	0.31	0.34	0.35	0.37	0.40	0.46	0.49
5000	0.18	0.20	0.21	0.25	0.27	0.28	0.32	0.35	0.37	0.38	0.41	0.48	0.50
5500					0.29	0.31	0.35	0.38	0.40	0.42	0.45	0.52	0.55
6000					0.32	0.34	0.38	0.41	0.43	0.45	0.49	0.55	0.58
6500					0.34	0.36	0.40	0.45	0.46	0.48	0.52	0.59	0.62
7000					0.37	0.39	0.43	0.48	0.50	0.52	0.55	0.62	0.65
7500					0.39	0.41	0.46	0.50	0.53	0.55	0.58	0.65	0.68
8000							0.49	0.53	0.55	0.57	0.61	0.68	0.71
8500							0.51	0.56	0.58	0.60	0.64	0.71	0.73
9000							0.54	0.58	0.61	0.63	0.67	0.73	0.75
9500							0.56	0.61	0.63	0.65	0.69	0.75	0.77
10000							0.58	0.63	0.65	0.68	0.71	0.76	0.78

Use this sprocket and rpm only if required to obtain speed ratio or to meet diameter limitations. See Engineering Section II-5, Sprocket Diameter — Speed, on page 178.

$$\text{Corrected Horsepower Rating} = [\text{Base Rating}] \times [\text{Belt Width Multiplier}]$$

### XL PowerGrip® Width Multipliers

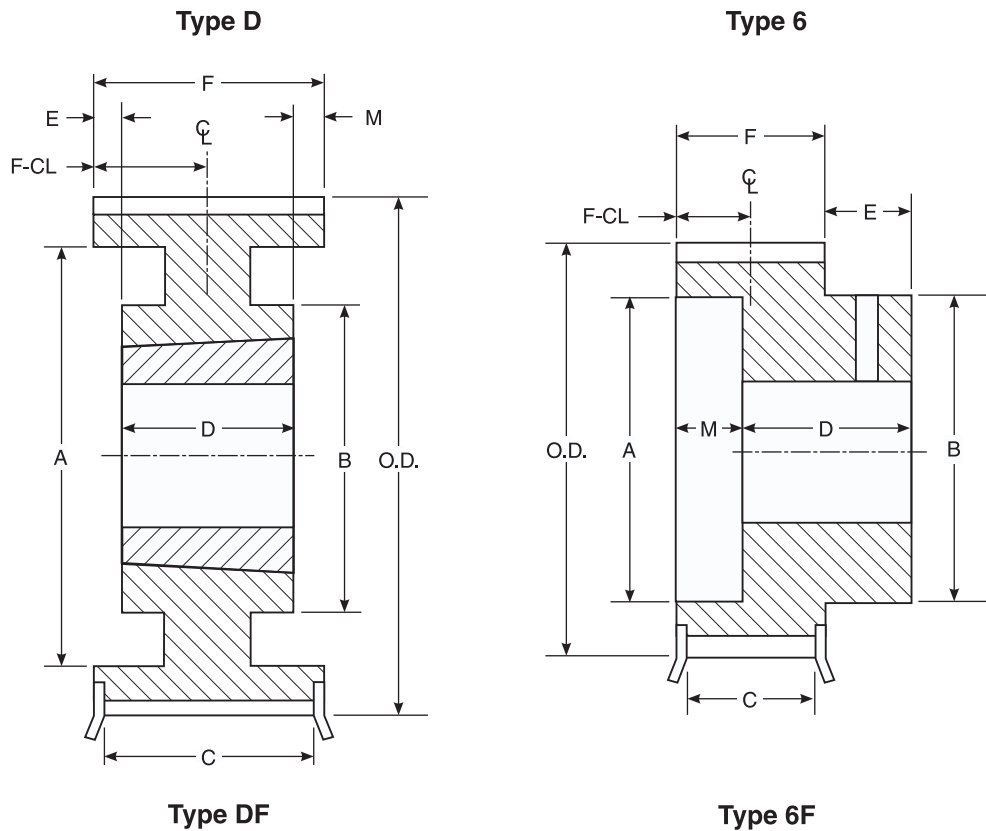
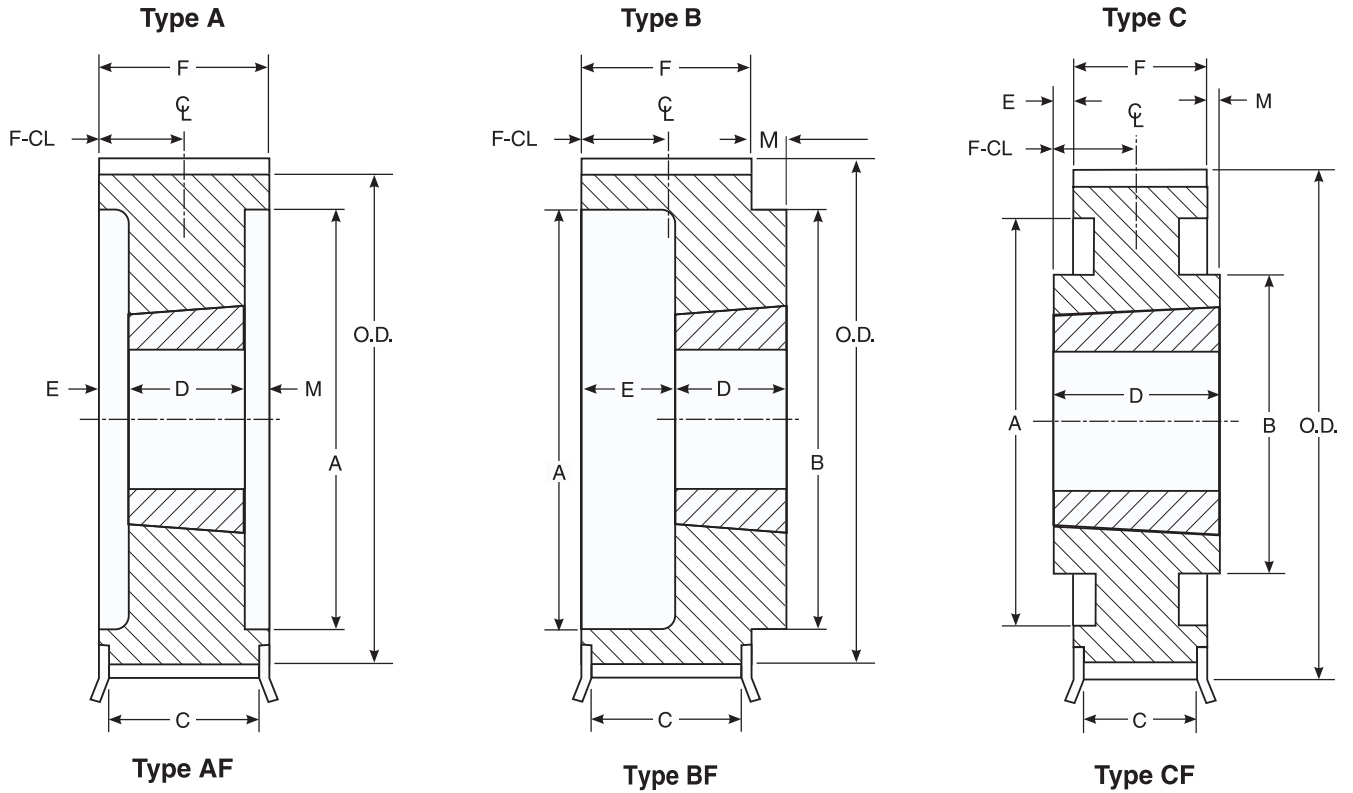
Belt Width (inches)	Width Multiplier
0.250	1.00
0.375	1.59







For 5mm, 8mm, and 14mm PowerGrip® GT®3 Belts



# 5mm Pitch PowerGrip® GT<sup>2</sup> Aluminum Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Dimensions (in)												Approx. Wt (lb) *	Approx. WR <sup>2</sup> **	Mati. Spec. ***	Screw Size ****
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bore Sizes		Bushing Size				
														Min.	Max.					
P12-5MGT-09AL	12	0.752	0.707	0.875	6F	---	0.44	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.250	0.02	0.000010	AL	8-32
P13-5MGT-09AL	13	0.815	0.770	0.938	6F	---	0.50	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.250	0.02	0.000014	AL	8-32
P14-5MGT-09AL	14	0.877	0.832	1.000	6F	---	0.50	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.250	0.03	0.000019	AL	8-32
P15-5MGT-09AL	15	0.940	0.895	1.063	6F	---	0.56	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.250	0.04	0.000025	AL	8-32
P16-5MGT-09AL	16	1.003	0.958	1.094	6F	---	0.56	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.313	0.03	0.000033	AL	8-32
P17-5MGT-09AL	17	1.065	1.020	1.188	6F	---	0.63	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.313	0.04	0.000043	AL	8-32
P18-5MGT-09AL	18	1.128	1.083	1.250	6F	---	0.69	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.375	0.05	0.000055	AL	8-32
P19-5MGT-09AL	19	1.191	1.146	1.313	6F	---	0.75	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.437	0.06	0.000069	AL	8-32
P20-5MGT-09AL	20	1.253	1.208	1.375	6F	---	0.81	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.500	0.06	0.000087	AL	8-32
P22-5MGT-09AL	22	1.379	1.334	1.500	6F	---	0.94	0.42	0.80	0.25	0.55	0	0.27	MPB	0.250	0.625	0.08	0.000131	AL	8-32
P24-5MGT-09AL	24	1.504	1.459	1.625	6F	---	1.00	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.687	0.10	0.000190	AL	8-32
P25-5MGT-09AL	25	1.566	1.521	1.688	6F	---	1.00	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.687	0.11	0.000221	AL	8-32
P26-5MGT-09AL	26	1.629	1.584	1.750	6F	---	1.06	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.750	0.12	0.000261	AL	8-32
P28-5MGT-09AL	28	1.754	1.709	1.875	6F	---	1.19	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.875	0.14	0.000360	AL	8-32
P30-5MGT-09AL	30	1.880	1.835	2.000	6F	---	1.19	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.875	0.16	0.000464	AL	8-32
P32-5MGT-09AL	32	2.005	1.960	2.125	6F	---	1.25	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	0.937	0.18	0.000601	AL	8-32
P34-5MGT-09AL	34	2.130	2.085	2.250	6F	---	1.38	0.42	0.86	0.31	0.55	0	0.27	MPB	0.250	1.062	0.21	0.000780	AL	8-32
P36-5MGT-09AL	36	2.256	2.211	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.313	1.062	0.25	0.001023	AL	8-32
P38-5MGT-09AL	38	2.381	2.336	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.313	1.187	0.28	0.001243	AL	8-32
P40-5MGT-09AL	40	2.506	2.461	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.313	1.187	0.30	0.001500	AL	8-32
P44-5MGT-09AL	44	2.757	2.712	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.313	1.187	0.35	0.002148	AL	8-32
P48-5MGT-09AL	48	3.008	2.963	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.40	0.003001	AL	10-32
P50-5MGT-09AL	50	3.133	3.088	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.43	0.003518	AL	10-32
P56-5MGT-09AL	56	3.509	3.464	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.54	0.005492	AL	10-32
P60-5MGT-09AL	60	3.760	3.715	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.62	0.007220	AL	10-32
P62-5MGT-09AL	62	3.885	3.840	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.64	0.008225	AL	10-32
P70-5MGT-09AL	70	4.386	4.341	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.80	0.013352	AL	10-32
P72-5MGT-09AL	72	4.511	4.466	---	6	---	1.50	---	0.94	0.39	0.55	0	0.27	MPB	0.375	1.187	0.84	0.014946	AL	10-32

**CAUTION: AL sprockets have limited wear resistance with 5MGT belts, and insufficient wear resistance and load capacity for 5M Poly Chain GT Carbon belts. Consider using for prototyping purposes.**

Notes:  
 \* Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore.  
 \*\* WR<sup>2</sup> values have lb-ft<sup>2</sup> units.  
 \*\*\* Aluminum sprockets have clear anodize finish.  
 \*\*\*\* 12 & 13 groove pulleys are supplied with one set screw. All other sizes are supplied with two set screws at 90 degrees.

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

Details shown which do not affect drive function may be changed without notification.



# 5mm Pitch PowerGrip® GT<sup>2</sup> Aluminum Sprocket Specifications

Sprocket Number	Number of Teeth		Diameters (in)		Design Type	Dimensions (in)										Bore Sizes		Approx. Wt (lb) *	Approx. WR <sup>2</sup> **	Mati. Spec. ***	Screw Size ****
	Pitch	O.D.	Flange Ref.	Type		A	B	C	D	E	F	M	F-CL	Bushing Size	Min.	Max.					
															Min.	Max.					
P12-5MGT-15AL	12	0.752	0.707	0.875	6F	---	0.44	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.250	0.02	0.000019	AL	8-32	
P13-5MGT-15AL	13	0.815	0.770	0.938	6F	---	0.50	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.250	0.03	0.000026	AL	8-32	
P14-5MGT-15AL	14	0.877	0.832	1.000	6F	---	0.50	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.250	0.04	0.000036	AL	8-32	
P15-5MGT-15AL	15	0.940	0.895	1.063	6F	---	0.56	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.250	0.04	0.000046	AL	8-32	
P16-5MGT-15AL	16	1.003	0.958	1.094	6F	---	0.56	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.313	0.05	0.000060	AL	8-32	
P17-5MGT-15AL	17	1.065	1.020	1.188	6F	---	0.63	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.313	0.06	0.000077	AL	8-32	
P18-5MGT-15AL	18	1.128	1.083	1.250	6F	---	0.69	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.375	0.07	0.000097	AL	8-32	
P19-5MGT-15AL	19	1.191	1.146	1.313	6F	---	0.75	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.437	0.08	0.000121	AL	8-32	
P20-5MGT-15AL	20	1.253	1.208	1.375	6F	---	0.81	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.500	0.08	0.000181	AL	8-32	
P22-5MGT-15AL	22	1.379	1.334	1.500	6F	---	0.94	0.66	1.03	0.25	0.78	0	0.39	MPB	0.250	0.625	0.11	0.000262	AL	8-32	
P24-5MGT-15AL	24	1.504	1.459	1.625	6F	---	1.00	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.687	0.13	0.000306	AL	8-32	
P25-5MGT-15AL	25	1.566	1.521	1.688	6F	---	1.00	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.687	0.14	0.000362	AL	8-32	
P26-5MGT-15AL	26	1.629	1.584	1.750	6F	---	1.06	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.750	0.16	0.000497	AL	8-32	
P28-5MGT-15AL	28	1.754	1.709	1.875	6F	---	1.19	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.875	0.18	0.000646	AL	8-32	
P30-5MGT-15AL	30	1.880	1.835	2.000	6F	---	1.19	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.875	0.21	0.000838	AL	8-32	
P32-5MGT-15AL	32	2.005	1.960	2.125	6F	---	1.25	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	0.937	0.24	0.001083	AL	8-32	
P34-5MGT-15AL	34	2.130	2.085	2.250	6F	---	1.38	0.66	1.09	0.31	0.78	0	0.39	MPB	0.250	1.062	0.28	0.001411	AL	8-32	
P36-5MGT-15AL	36	2.256	2.211	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.313	1.062	0.33	0.001725	AL	8-32	
P38-5MGT-15AL	38	2.381	2.336	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.313	1.187	0.36	0.002093	AL	8-32	
P40-5MGT-15AL	40	2.506	2.461	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.313	1.187	0.40	0.003019	AL	8-32	
P44-5MGT-15AL	44	2.757	2.712	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.313	1.187	0.47	0.004240	AL	8-32	
P48-5MGT-15AL	48	3.008	2.963	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	0.58	0.004979	AL	10-32	
P50-5MGT-15AL	50	3.133	3.088	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	0.62	0.007803	AL	10-32	
P56-5MGT-15AL	56	3.509	3.464	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	0.74	0.010274	AL	10-32	
P60-5MGT-15AL	60	3.760	3.715	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	0.84	0.011713	AL	10-32	
P62-5MGT-15AL	62	3.885	3.840	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	0.91	0.019047	AL	10-32	
P70-5MGT-15AL	70	4.386	4.341	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	1.14	0.021326	AL	10-32	
P72-5MGT-15AL	72	4.511	4.466	---	6	---	1.50	---	1.19	0.41	0.78	0	0.39	MPB	0.375	1.187	1.21	0.021326	AL	10-32	

**CAUTION: AL sprockets have limited wear resistance with 5MGT belts, and insufficient wear resistance and load capacity for 5M Poly Chain GT Carbon belts. Consider using for prototyping purposes.**

Notes: \* Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore.  
 \*\* WR<sup>2</sup> values have lb-ft<sup>2</sup> units.  
 \*\*\* Aluminum sprockets have clear anodize finish.  
 \*\*\*\* 12 & 13 groove pulleys are supplied with one set screw. All other sizes are supplied with two set screws at 90 degrees.

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

Details shown which do not affect drive function may be changed without notification.



# 5mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)				Dimensions (in)											Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.	
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size		Bore Sizes				
														Min.	Max.	Min.				Max.
P18-5MGT-15-MPB	18	1.128	1.083	1.375	6F	—	0.68	0.71	1.25	0.36	0.89	0	0.45	MPB	0.250	0.375	0.24	0.0002	ST	
P19-5MGT-15-MPB	19	1.191	1.146	1.438	6F	—	0.88	0.71	1.25	0.36	0.89	0	0.45	MPB	0.250	0.437	0.28	0.0003	ST	
P20-5MGT-15-MPB	20	1.253	1.208	1.531	6F	—	0.90	0.71	1.25	0.36	0.89	0	0.45	MPB	0.250	0.500	0.32	0.0004	ST	
P21-5MGT-15-MPB	21	1.316	1.271	1.531	6F	—	0.90	0.71	1.25	0.36	0.89	0	0.45	MPB	0.250	0.500	0.36	0.0005	ST	
P22-5MGT-15-MPB	22	1.379	1.334	1.656	6F	—	0.94	0.71	1.28	0.39	0.89	0	0.45	MPB	0.250	0.500	0.40	0.0006	ST	
P23-5MGT-15-MPB	23	1.441	1.396	1.656	6F	—	1.15	0.71	1.28	0.39	0.89	0	0.45	MPB	0.375	0.625	0.44	0.0007	ST	
P24-5MGT-15-MPB	24	1.504	1.459	1.781	6F	—	1.18	0.71	1.28	0.39	0.89	0	0.45	MPB	0.375	0.625	0.47	0.0009	ST	
P25-5MGT-15-MPB	25	1.566	1.521	1.781	6F	—	1.18	0.71	1.28	0.39	0.89	0	0.45	MPB	0.375	0.625	0.55	0.0011	ST	
P26-5MGT-15-MPB	26	1.629	1.584	1.906	6F	—	1.21	0.71	1.28	0.39	0.89	0	0.45	MPB	0.375	0.687	0.60	0.0013	ST	
P28-5MGT-15-MPB	28	1.754	1.709	2.031	6F	—	1.37	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	0.750	0.67	0.0017	ST	
P30-5MGT-15-MPB	30	1.880	1.835	2.125	6F	—	1.44	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	0.937	0.75	0.0022	ST	
P32-5MGT-15-MPB	32	2.005	1.960	2.125	6F	—	1.44	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	0.937	0.88	0.0029	ST	
P34-5MGT-15-MPB	34	2.130	2.085	2.375	6F	—	1.69	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	1.000	0.95	0.0036	ST	
P36-5MGT-15-MPB	36	2.256	2.211	2.375	6F	—	1.69	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	1.125	1.12	0.0047	ST	
P36-5MGT-15	36	2.256	2.211	2.375	AF	—	—	0.71	0.88	0	0.88	0	0.44	1108	0.500	1.000	0.50	0.0021	ST	
P38-5MGT-15-MPB	38	2.381	2.336	2.625	6F	—	1.96	0.71	1.34	0.45	0.89	0	0.45	MPB	0.500	1.250	1.35	0.0064	ST	
P38-5MGT-15	38	2.381	2.336	2.625	AF	—	—	0.71	0.88	0	0.89	0	0.45	1108	0.500	1.000	0.61	0.0029	ST	
P40-5MGT-15-MPB	40	2.506	2.461	2.750	6F	—	2.09	0.71	1.38	0.49	0.89	0	0.45	MPB	0.500	1.312	1.50	0.0079	ST	
P40-5MGT-15	40	2.506	2.461	2.750	AF	—	—	0.71	0.88	0	0.89	0	0.45	1108	0.500	1.000	0.72	0.0038	ST	
P44-5MGT-15	44	2.757	2.712	3.094	AF	—	—	0.71	0.88	0	0.89	0	0.45	1108	0.500	1.000	0.95	0.0061	ST	
P45-5MGT-15-MPB	45	2.820	2.775	3.094	6F	—	2.34	0.71	1.38	0.49	0.89	0	0.45	MPB	0.500	1.500	2.00	0.0134	ST	
P48-5MGT-15	48	3.008	2.963	3.330	BF	—	2.50	0.71	1.00	0	0.89	0.13	0.45	1210	0.500	1.250	0.97	0.0074	DI	
P50-5MGT-15-MPB	50	3.133	3.088	3.330	6F	—	2.50	0.71	1.38	0.49	0.89	0	0.45	MPB	0.500	1.750	2.30	0.0190	DI	
P52-5MGT-15	52	3.258	3.213	3.566	BF	—	2.81	0.71	1.00	0	0.89	0.13	0.45	1210	0.500	1.250	1.17	0.0105	DI	
P56-5MGT-15	56	3.509	3.464	3.800	BF	—	2.88	0.71	1.00	0	0.89	0.13	0.45	1610	0.500	1.688	1.37	0.0143	DI	
P60-5MGT-15	60	3.760	3.715	4.044	BF	—	3.12	0.71	1.00	0	0.89	0.13	0.45	1610	0.500	1.688	1.68	0.0201	DI	
P64-5MGT-15	64	4.010	3.965	4.170	BF	—	3.25	0.71	1.00	0	0.89	0.13	0.45	1610	0.500	1.688	2.00	0.0273	DI	
P68-5MGT-15	68	4.261	4.216	4.520	BF	—	3.25	0.71	1.00	0	0.89	0.13	0.45	1610	0.500	1.688	2.40	0.0370	DI	
P72-5MGT-15	72	4.511	4.466	4.670	BF	—	3.25	0.71	1.00	0	0.89	0.13	0.45	1610	0.500	1.688	2.70	0.0468	DI	
P80-5MGT-15	80	5.013	4.968	—	B	—	3.25	—	1.00	0	0.89	0.11	0.45	1610	0.500	1.688	3.60	0.0771	DI	
P90-5MGT-15	90	5.639	5.594	—	B	—	3.25	—	1.00	0	0.89	0.11	0.45	1610	0.500	1.688	5.00	0.1358	DI	
P112-5MGT-15	112	7.018	6.973	—	B	—	4.38	—	1.25	0	0.89	0.36	0.45	2012	0.500	2.125	8.30	0.3503	DI	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.





# 5mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mater. Spec.	
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Bushing Size	Bore Sizes				
															Min.				Max.
P18-5MGT-25-MPB	18	1.128	1.083	1.375	---	0.68	1.1	1.65	0.37	1.28	0	0.64	MPB	0.250	0.375	0.24	0.0002	ST	
P19-5MGT-25-MPB	19	1.191	1.146	1.438	---	0.88	1.1	1.65	0.37	1.28	0	0.64	MPB	0.250	0.437	0.28	0.0003	ST	
P20-5MGT-25-MPB	20	1.253	1.208	1.531	---	0.90	1.1	1.65	0.37	1.28	0	0.64	MPB	0.250	0.500	0.32	0.0004	ST	
P21-5MGT-25-MPB	21	1.316	1.271	1.531	---	0.90	1.1	1.65	0.37	1.28	0	0.64	MPB	0.250	0.500	0.36	0.0005	ST	
P22-5MGT-25-MPB	22	1.379	1.334	1.656	---	0.94	1.1	1.68	0.40	1.28	0	0.64	MPB	0.250	0.500	0.40	0.0006	ST	
P23-5MGT-25-MPB	23	1.441	1.396	1.656	---	1.15	1.1	1.68	0.40	1.28	0	0.64	MPB	0.375	0.625	0.44	0.0007	ST	
P24-5MGT-25-MPB	24	1.504	1.459	1.781	---	1.18	1.1	1.68	0.40	1.28	0	0.64	MPB	0.375	0.625	0.47	0.0009	ST	
P25-5MGT-25-MPB	25	1.566	1.521	1.781	---	1.18	1.1	1.68	0.40	1.28	0	0.64	MPB	0.375	0.625	0.55	0.0011	ST	
P26-5MGT-25-MPB	26	1.629	1.584	1.906	---	1.21	1.1	1.68	0.40	1.28	0	0.64	MPB	0.375	0.687	0.60	0.0013	ST	
P28-5MGT-25-MPB	28	1.754	1.709	2.031	---	1.37	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	0.750	0.67	0.0017	ST	
P30-5MGT-25-MPB	30	1.880	1.835	2.125	---	1.44	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	0.937	0.75	0.0022	ST	
P32-5MGT-25-MPB	32	2.005	1.960	2.125	---	1.44	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	0.937	0.88	0.0029	ST	
P34-5MGT-25-MPB	34	2.130	2.085	2.375	---	1.69	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	1.000	0.95	0.0036	ST	
P36-5MGT-25-MPB	36	2.256	2.211	2.375	---	1.69	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	1.125	1.12	0.0047	ST	
P36-5MGT-25	36	2.256	2.211	2.375	---	---	1.1	0.88	0	1.29	0.41	0.65	1108	0.500	1.000	0.50	0.0021	ST	
P38-5MGT-25-MPB	38	2.381	2.336	2.625	---	1.96	1.1	1.73	0.45	1.28	0	0.64	MPB	0.500	1.250	1.35	0.0064	ST	
P38-5MGT-25	38	2.381	2.336	2.625	---	---	1.1	0.88	0.00	1.29	0.41	0.65	1108	0.500	1.000	0.61	0.0029	ST	
P40-5MGT-25-MPB	40	2.506	2.461	2.750	---	2.09	1.1	1.78	0.50	1.28	0	0.64	MPB	0.500	1.312	1.50	0.0079	ST	
P40-5MGT-25	40	2.506	2.461	2.750	---	---	1.1	0.88	0	1.29	0.41	0.65	1108	0.500	1.000	0.72	0.0038	ST	
P44-5MGT-25	44	2.757	2.712	3.094	---	---	1.1	0.88	0	1.29	0.41	0.65	1108	0.500	1.000	0.95	0.0061	ST	
P45-5MGT-25-MPB	45	2.820	2.775	3.094	---	2.34	1.1	1.78	0.50	1.28	0	0.64	MPB	0.500	1.500	2.00	0.0134	ST	
P48-5MGT-25	48	3.008	2.963	3.330	---	---	1.1	1.00	0	1.28	0.28	0.64	1210	0.500	1.250	0.97	0.0074	DI	
P50-5MGT-25-MPB	50	3.133	3.088	3.330	---	2.50	1.1	1.78	0.50	1.28	0	0.64	MPB	0.500	1.750	2.30	0.0190	DI	
P52-5MGT-25	52	3.258	3.213	3.566	---	---	1.1	1.00	0	1.28	0.28	0.64	1210	0.500	1.250	1.17	0.0105	DI	
P56-5MGT-25	56	3.509	3.464	3.800	---	---	1.1	1.00	0	1.28	0.28	0.64	1610	0.500	1.688	1.37	0.0143	DI	
P60-5MGT-25	60	3.760	3.715	4.044	---	---	1.1	1.00	0	1.28	0.28	0.64	1610	0.500	1.688	1.68	0.0201	DI	
P64-5MGT-25	64	4.010	3.965	4.170	---	---	1.1	1.00	0	1.28	0.28	0.64	1610	0.500	1.688	2.00	0.0273	DI	
P68-5MGT-25	68	4.261	4.216	4.520	---	---	1.1	1.25	0.03	1.28	0	0.64	2012	0.500	2.125	2.40	0.0370	DI	
P72-5MGT-25	72	4.511	4.466	4.670	---	---	1.1	1.25	0.03	1.28	0	0.64	2012	0.500	2.125	2.70	0.0468	DI	
P80-5MGT-25	80	5.013	4.968	---	---	---	---	1.25	0.03	1.28	0	0.64	2012	0.500	2.125	3.60	0.0771	DI	
P90-5MGT-25	90	5.639	5.594	---	---	---	---	1.25	0.03	1.28	0	0.64	2012	0.500	2.125	5.00	0.1358	DI	
P112-5MGT-25	112	7.018	6.973	---	---	---	---	1.25	0.03	1.28	0	0.64	2012	0.500	2.125	8.30	0.3503	DI	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.





# 8mm Pitch PowerGrip® GT®2 Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.		
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Bushing Size	Bore Sizes					
															Min.				Max.	
P22-8MGT-12	22	2.206	2.152	2.61	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1008	0.500	1.000	0.35	0.00172	G
P23-8MGT-12	23	2.306	2.250	2.76	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1008	0.500	1.000	0.44	0.00230	G
P24-8MGT-12	24	2.406	2.350	2.76	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1008	0.500	1.000	0.49	0.00273	G
P25-8MGT-12	25	2.506	2.450	2.91	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1108	0.500	1.125	0.51	0.00322	G
P26-8MGT-12	26	2.607	2.550	2.91	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1108	0.500	1.125	0.56	0.00368	G
P27-8MGT-12	27	2.707	2.650	3.21	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1108	0.500	1.125	0.63	0.00485	G
P28-8MGT-12	28	2.807	2.750	3.21	AF-1	-	-	0.60	0.88	0.00	0.88	0.00	0.00	0.44	1108	0.500	1.125	0.74	0.00555	G
P29-8MGT-12	29	2.907	3.150	3.41	AF-1	-	-	0.72	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	0.85	0.00691	G
P30-8MGT-12	30	3.008	3.150	3.33	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	0.98	0.00804	G
P31-8MGT-12	31	3.108	3.150	3.33	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	0.98	0.00986	G
P32-8MGT-12	32	3.208	3.150	3.61	AF-1	-	-	0.72	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.07	0.01125	G
P33-8MGT-12	33	3.308	3.250	3.57	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.25	0.01390	G
P34-8MGT-12	34	3.409	3.360	3.81	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.38	0.01620	G
P35-8MGT-12	35	3.509	3.460	3.81	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.45	0.01770	G
P36-8MGT-12	36	3.609	3.560	4.01	AF-1	-	-	0.72	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.55	0.01958	G
P37-8MGT-12	37	3.709	3.660	4.04	AF-1	-	-	0.80	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.84	0.02299	G
P38-8MGT-12	38	3.810	3.760	4.21	AF-1	-	-	0.72	1.00	0.00	1.00	0.00	0.00	0.50	1210	0.500	1.250	1.82	0.02522	G
P40-8MGT-12	40	4.010	3.960	4.41	BF-1	-	3.25	0.57	1.00	0.00	0.85	0.15	0.43	1210	0.500	1.250	2.08	0.02928	G	
P44-8MGT-12	44	4.411	4.360	4.76	BF-1	-	3.63	0.57	1.00	0.00	0.85	0.15	0.43	1610	0.500	1.688	2.32	0.04351	G	
P48-8MGT-12	48	4.812	4.760	5.21	BF-1	-	3.63	0.57	1.00	0.00	0.85	0.15	0.43	1610	0.500	1.688	2.89	0.06208	G	
P56-8MGT-12	56	5.614	5.560	6.01	BF-1	-	3.63	0.57	1.00	0.00	0.85	0.15	0.43	1610	0.500	1.688	4.23	0.11864	G	
P60-8MGT-12	60	6.015	5.960	6.42	BF-1	-	3.63	0.57	1.00	0.00	0.85	0.15	0.43	1610	0.500	1.688	4.86	0.15256	G	
P64-8MGT-12	64	6.416	6.360	6.72	CF-1	5.71	3.63	0.57	1.00	0.08	0.85	0.07	0.51	1610	0.500	1.688	4.43	0.15333	G	
P72-8MGT-12	72	7.218	7.160	7.50	CF-1	6.51	3.63	0.57	1.00	0.09	0.85	0.06	0.52	1610	0.500	1.688	5.51	0.23980	G	
P80-8MGT-12	80	8.020	7.970	8.42	CF-1	7.23	3.36	0.57	1.00	0.09	0.85	0.06	0.52	1610	0.500	1.688	6.74	0.36155	G	
P90-8MGT-12	90	9.023	8.970	8.97	C-1	8.38	3.63	0.85	1.00	0.09	0.85	0.06	0.52	1610	0.500	1.688	8.68	0.60674	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 8mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.			
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size				Bore Sizes		
														Min.				Max.	Min.	Max.
P22-8MGT-20	22	2.206	2.152	2.559	AF-1	1.55	-	0.85	0.88	0	1.14	0.26	0.57	1108	0.500	1.125	0.5	0.002	D	
P24-8MGT-20	24	2.406	2.352	2.756	AF-1	1.55	-	0.85	0.88	0	1.14	0.26	0.57	1108	0.500	1.125	0.7	0.004	D	
P25-8MGT-20	25	2.506	2.452	2.760	AF-1	1.79	-	0.85	0.88	0	1.13	0.26	0.57	1108	0.500	1.125	0.8	0.008	D	
P26-8MGT-20	26	2.607	2.553	2.953	AF-1	1.55	-	0.85	0.88	0	1.14	0.26	0.57	1108	0.500	1.125	0.9	0.006	D	
P27-8MGT-20	27	2.707	2.653	3.210	AF-1	2.07	-	0.85	0.88	0	1.13	0.26	0.57	1108	0.500	1.125	1.1	0.010	D	
P28-8MGT-20	28	2.807	2.753	3.150	AF-1	1.10	-	0.85	0.88	0.26	1.14	0	0.57	1108	0.500	1.125	1.2	0.009	D	
P29-8MGT-20	29	2.907	2.853	3.090	AF-1	2.22	-	0.93	0.88	0	1.13	0.25	0.57	1108	0.500	1.125	1.3	0.011	D	
P30-8MGT-20	30	3.008	2.954	3.346	AF-1	1.20	-	0.85	1.00	0.13	1.13	0	0.57	1210	0.500	1.250	1.2	0.011	D	
P31-8MGT-20	31	3.108	3.054	3.330	AF-1	2.47	-	0.93	1.00	0.13	1.13	0	0.57	1210	0.500	1.250	1.4	0.013	D	
P32-8MGT-20	32	3.208	3.154	3.543	AF-1	1.91	-	0.85	1.00	0	1.13	0.13	0.57	1210	0.500	1.250	1.4	0.015	D	
P33-8MGT-20	33	3.308	3.254	3.810	AF-1	2.67	-	0.85	1.00	0	1.13	0.13	0.57	1210	0.500	1.250	1.5	0.018	D	
P34-8MGT-20	34	3.409	3.355	3.819	AF-1	1.60	-	0.85	1.00	0.13	1.13	0	0.57	1610	0.500	1.688	1.4	0.018	D	
P35-8MGT-20	35	3.509	3.455	3.810	AF-1	2.86	-	0.93	1.00	0	1.13	0.13	0.57	1610	0.500	1.688	1.6	0.022	D	
P36-8MGT-20	36	3.609	3.555	3.937	AF-1	1.60	-	0.85	1.00	0.13	1.13	0	0.57	1610	0.500	1.688	1.7	0.024	D	
P37-8MGT-20	37	3.709	3.655	4.040	AF-1	3.06	-	0.93	1.00	0	1.13	0.13	0.57	1610	0.500	1.688	1.9	0.027	D	
P38-8MGT-20	38	3.810	3.756	4.134	AF-1	1.60	-	0.85	1.00	0.13	1.13	0	0.57	1610	0.500	1.688	2.0	0.032	G	
P39-8MGT-20	39	3.910	3.856	4.410	AF-1	3.26	-	0.85	1.00	0	1.13	0.13	0.57	1610	0.500	1.688	2.3	0.033	G	
P40-8MGT-20	40	4.010	3.956	4.331	AF-1	1.60	-	0.85	1.00	0.13	1.13	0	0.57	1610	0.500	1.688	2.4	0.040	G	
P42-8MGT-20	42	4.211	4.157	4.911	AF-1	3.47	-	0.85	1.00	0	1.13	0.13	0.57	1610	0.500	1.688	2.6	0.044	G	
P44-8MGT-20	44	4.411	4.357	4.764	BF-1	-	3.88	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	2.7	0.058	G	
P46-8MGT-20	46	4.612	4.558	4.910	BF-1	-	0	0.97	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	3.2	0.062	G	
P48-8MGT-20	48	4.812	4.758	5.157	BF-1	-	4.25	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	3.7	0.091	G	
P50-8MGT-20	50	5.013	4.959	5.413	BF-1	-	4.18	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	4.5	0.073	G	
P53-8MGT-20	53	5.314	5.260	5.763	BF-1	-	0	0.93	1.25	0	1.12	0	0.56	2012	0.500	2.125	5.0	0.133	G	
P56-8MGT-20	56	5.614	5.560	5.945	BF-1	-	4.38	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	5.6	0.176	G	
P64-8MGT-20	64	6.416	6.362	6.772	BF-1	-	4.38	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	7.7	0.307	G	
P72-8MGT-20	72	7.218	7.164	7.598	BF-1	-	4.38	0.85	1.25	0	1.12	0.13	0.56	2012	0.500	2.125	10.2	0.499	G	
P80-8MGT-20	80	8.020	7.966	8.386	BF-1	-	4.88	0.85	1.75	0	1.12	0.63	0.56	2517	0.500	2.688	13.1	0.772	G	
P90-8MGT-20	90	9.023	8.969	-	C-2	7.90	4.88	-	1.75	0.31	1.13	0.31	0.88	2517	0.500	2.688	12.5	0.903	G	
P112-8MGT-20	112	11.229	11.175	-	C-2	10.51	4.88	-	1.75	0.31	1.13	0.31	0.88	2517	0.500	2.688	15.8	1.590	G	
P144-8MGT-20	144	14.437	14.383	-	C-3	13.20	4.88	-	1.75	0.56	1.13	0	1.13	2517	0.500	2.688	24.7	1.890	G	
P192-8MGT-20	192	19.249	19.195	-	C-3	18.45	6.25	-	2.00	0.44	1.13	0.44	1.00	3020	0.500	3.250	31.6	5.370	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 8mm Pitch PowerGrip® GT®2 Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mater. Spec.	
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Bushing Size	Bore Sizes				
															Min.				Max.
P22-8MGT-30	22	2.206	2.152	2.559	AF-1	1.55	-	1.22	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	0.6	0.003	D
P24-8MGT-30	24	2.406	2.352	2.756	AF-1	1.55	-	1.22	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	0.9	0.005	D
P25-8MGT-30	25	2.506	2.452	2.730	AF-1	1.83	-	1.30	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	1.0	0.009	D
P26-8MGT-30	26	2.607	2.553	2.953	AF-1	1.75	-	1.22	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	1.1	0.008	D
P27-8MGT-30	27	2.707	2.653	3.210	AF-1	2.03	-	1.22	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	1.4	0.011	D
P28-8MGT-30	28	2.807	2.753	3.150	AF-1	1.55	-	1.22	0.88	0	1.50	0.63	0.75	1108	0.500	1.125	1.5	0.012	G
P29-8MGT-30	29	2.907	2.853	3.090	AF-1	2.22	-	1.30	0.88	0	1.50	0.62	0.75	1108	0.500	1.125	1.6	0.012	D
P30-8MGT-30	30	3.008	2.954	3.346	AF-1	1.91	-	1.22	1.00	0	1.50	0.50	0.75	1210	0.500	1.250	1.5	0.015	D
P31-8MGT-30	31	3.108	3.054	3.410	AF-1	2.38	-	1.22	1.00	0	1.50	0.50	0.75	1210	0.500	1.250	1.7	0.018	D
P32-8MGT-30	32	3.208	3.154	3.543	AF-1	2.19	-	1.22	1.00	0	1.50	0.50	0.75	1210	0.500	1.250	1.7	0.019	D
P33-8MGT-30	33	3.308	3.254	3.570	AF-1	2.63	-	1.30	1.00	0	1.50	0.50	0.75	1210	0.500	1.250	1.8	0.020	D
P34-8MGT-30	34	3.409	3.355	3.819	AF-1	2.29	-	1.22	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	1.8	0.024	D
P35-8MGT-30	35	3.509	3.455	3.810	AF-1	2.82	-	1.30	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	2.0	0.024	D
P36-8MGT-30	36	3.609	3.555	3.937	AF-1	2.29	-	1.22	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	2.2	0.032	D
P37-8MGT-30	37	3.709	3.655	4.040	AF-1	3.02	-	1.30	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	2.3	0.027	D
P38-8MGT-30	38	3.810	3.756	4.134	AF-1	2.53	-	1.22	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	2.5	0.040	D
P39-8MGT-30	39	3.910	3.856	4.410	AF-1	3.22	-	1.22	1.00	0	1.50	0.50	0.75	1610	0.500	1.688	2.5	0.034	G
P40-8MGT-30	40	4.010	3.956	4.331	AF-1	3.00	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	2.3	0.045	G
P42-8MGT-30	42	4.211	4.157	4.910	AF-1	3.47	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	3.0	0.053	G
P44-8MGT-30	44	4.411	4.357	4.764	AF-1	3.50	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	3.2	0.071	G
P46-8MGT-30	46	4.612	4.558	4.910	AF-1	3.62	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	3.9	0.069	G
P48-8MGT-30	48	4.812	4.758	5.157	AF-1	3.80	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	4.2	0.106	G
P50-8MGT-30	50	5.013	4.959	5.410	AF-1	4.13	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	5.0	0.110	G
P53-8MGT-30	53	5.314	5.260	6.110	AF-1	4.22	-	1.22	1.25	0	1.54	0.29	0.77	2012	0.500	2.125	6.2	0.153	G
P56-8MGT-30	56	5.614	5.560	5.945	AF-1	4.60	-	1.22	1.25	0	1.50	0.25	0.75	2012	0.500	2.125	6.3	0.208	G
P64-8MGT-30	64	6.416	6.362	6.772	BF-1	-	4.88	1.22	1.75	0	1.50	0.25	0.75	2517	0.500	2.688	9.5	0.404	G
P72-8MGT-30	72	7.218	7.164	7.598	BF-1	-	4.88	1.22	1.75	0	1.50	0.25	0.75	2517	0.500	2.688	12.8	0.659	G
P80-8MGT-30	80	8.023	7.966	8.386	BF-1	-	4.88	1.22	1.75	0	1.50	0.25	0.75	2517	0.500	2.688	16.5	1.019	G
P90-8MGT-30	90	9.023	8.969	-	C-2	7.90	4.88	-	1.75	0.13	1.50	0.12	0.75	2517	0.500	2.688	21.6	1.650	G
P112-8MGT-30	112	11.229	11.175	-	C-2	10.00	4.88	-	1.75	0.13	1.50	0.12	0.75	2517	0.500	2.688	25.4	3.420	G
P144-8MGT-30	144	14.437	14.383	-	C-2	13.20	4.88	-	1.88	0.38	1.50	0	0.75	2517	0.500	2.688	31.0	6.014	G
P192-8MGT-30	192	19.249	19.195	-	C-3	18.41	6.25	-	2.00	0.25	1.50	0.25	1.00	3020	0.500	3.250	33.4	7.270	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 8mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mater. Spec.			
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size				Bore Sizes		
														Min.				Max.	Min.	Max.
P28-8MGT-50-MPB	28	2.807	2.753	3.207	6F-1	1.80	2.34	2.10	2.50	0.62	2.38	0.50	1.19	MPB	0.500	1.500	3.7	0.024	D	
P30-8MGT-50	30	3.008	2.954	3.346	AF-1	2.00	—	2.10	1.00	0	2.38	0.500	1.19	1210	0.500	1.250	2.2	0.023	D	
P32-8MGT-50	32	3.208	3.154	3.543	AF-1	2.36	—	2.10	1.00	0	2.38	0.500	1.19	1210	0.500	1.250	2.3	0.028	D	
P34-8MGT-50	34	3.409	3.355	3.819	AF-1	2.57	—	2.10	1.00	0	2.38	0.500	1.19	1610	0.500	1.688	4.0	0.045	D	
P36-8MGT-50	36	3.609	3.555	3.937	AF-1	2.77	—	2.10	1.00	0	2.38	0.500	1.19	1610	0.500	1.688	2.7	0.043	G	
P38-8MGT-50	38	3.810	3.756	4.134	AF-1	2.97	—	2.10	1.00	0	2.38	0.500	1.19	1610	0.500	1.688	3.1	0.054	G	
P40-8MGT-50	40	4.010	3.956	4.331	AF-1	2.97	—	2.10	1.25	0	2.38	0.500	1.19	2012	0.500	2.125	3.5	0.068	D	
P44-8MGT-50	44	4.411	4.357	4.764	AF-1	3.50	—	2.10	1.25	0	2.38	0.500	1.19	2012	0.500	2.125	4.3	0.099	G	
P48-8MGT-50	48	4.812	4.758	5.157	AF-1	3.80	—	2.10	1.25	0	2.38	0.500	1.19	2012	0.500	2.125	5.5	0.149	G	
P56-8MGT-50	56	5.614	5.560	5.945	AF-1	4.60	—	2.10	1.75	0	2.38	0.63	1.19	2517	0.500	2.688	8.1	0.295	G	
P64-8MGT-50	64	6.416	6.362	6.772	AF-1	5.40	—	2.10	1.75	0	2.38	0.63	1.19	2517	0.500	2.688	11.7	0.527	G	
P72-8MGT-50	72	7.218	7.164	7.598	AF-1	6.20	—	2.10	1.75	0	2.38	0.63	1.19	2517	0.500	2.688	15.7	0.862	G	
P80-8MGT-50	80	8.020	7.966	8.386	AF-1	6.90	—	2.10	1.75	0	2.38	0.63	1.19	2517	0.500	2.688	20.3	1.343	G	
P90-8MGT-50	90	9.023	8.969	—	A-1	7.90	—	—	2.00	0	2.38	0.38	1.19	3020	0.875	3.250	26.9	2.277	G	
P112-8MGT-50	112	11.229	11.175	—	A-2	10.00	—	—	2.00	0	2.38	0.38	1.19	3020	0.875	3.250	29.8	3.746	G	
P144-8MGT-50	144	14.437	14.383	—	A-3	13.49	—	—	2.00	0	2.39	0.39	1.19	3020	0.875	3.250	49.0	8.988	D	
P192-8MGT-50	192	19.249	19.195	—	A-3	18.00	—	—	2.00	0	2.38	0.38	1.19	3020	0.875	3.250	108.0	32.21	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 8mm Pitch PowerGrip® GT®2 Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.	
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Bushing Size	Bore Sizes				
															Min.				Max.
P34-8MGT-85	34	3.409	3.355	3.819	AF-1	2.52	—	3.47	1.50	0.75	3.75	1.50	1.88	1615	0.500	1.688	3.9	0.054	G
P36-8MGT-85	36	3.609	3.555	4.009	AF-1	2.72	—	3.47	1.50	0.75	3.75	1.50	1.88	1615	0.500	1.688	4.4	0.069	G
P38-8MGT-85	38	3.810	3.756	4.210	AF-1	3.00	—	3.47	1.00	1.38	3.75	1.38	1.88	1610	0.500	1.688	4.3	0.077	G
P40-8MGT-85	40	4.010	3.956	4.410	AF-1	3.12	—	3.47	1.25	1.25	3.75	1.25	1.88	2012	0.500	2.125	4.7	0.097	D
P44-8MGT-85	44	4.411	4.357	4.764	AF-1	3.50	—	3.47	1.25	1.25	3.75	1.25	1.88	2012	0.500	2.125	5.9	0.144	G
P48-8MGT-85	48	4.812	4.758	5.212	AF-1	3.80	—	3.47	1.25	1.25	3.75	1.25	1.88	2012	0.500	2.125	7.6	0.214	G
P56-8MGT-85	56	5.614	5.560	6.014	AF-1	4.60	—	3.47	1.75	0.81	3.75	1.19	1.88	2517	0.500	2.688	10.6	0.405	G
P64-8MGT-85	64	6.416	6.362	6.716	AF-1	5.40	—	3.47	1.75	0.59	3.75	1.41	1.88	2517	0.500	2.688	14.5	0.698	G
P72-8MGT-85	72	7.218	7.164	7.500	AF-1	6.20	—	3.47	2.00	0.88	3.76	0.88	1.88	3020	0.875	3.250	18.0	1.121	G
P80-8MGT-85	80	8.020	7.966	8.420	AF-1	7.20	—	3.47	2.00	0.50	3.75	1.25	1.88	3020	0.875	3.250	22.4	1.642	G
P90-8MGT-85	90	9.023	8.969	—	A-1	7.90	—	—	2.00	0.50	3.75	1.25	1.88	3020	0.875	3.250	31.5	2.846	G
P112-8MGT-85	112	11.229	11.175	—	D-1	10.00	6.25	—	2.00	0.50	3.75	1.25	1.88	3020	0.875	3.250	33.2	4.621	G
P144-8MGT-85	144	14.437	14.383	—	D-1	13.44	6.56	—	3.50	0	3.75	0.25	1.88	3535	1.188	3.938	54.1	11.06	G
P192-8MGT-85	192	19.249	19.195	—	D-1	18.00	7.00	—	3.50	0.13	3.76	0.13	1.88	3535	1.188	3.938	125.0	39.63	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 14mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Bore Sizes		Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtl. Spec.
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Bushing Size	Min.	Max.				
															0.500	2.125				
P28-14MGT-40	28	4.912	4.802	5.560	AF-1	3.13	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	5.9	0.153	G	
P29-14MGT-40	29	5.088	4.978	5.560	AF-1	3.15	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	6.6	0.181	G	
P30-14MGT-40	30	5.263	5.153	6.125	AF-1	3.85	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	6.5	0.193	G	
P31-14MGT-40	31	5.439	5.329	6.110	AF-1	4.22	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	7.5	0.164	G	
P32-14MGT-40	32	5.614	5.504	6.125	AF-1	3.92	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	8.0	0.265	G	
P33-14MGT-40	33	5.790	5.680	6.470	AF-1	4.53	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	9.0	0.208	G	
P34-14MGT-40	34	5.965	5.855	6.500	AF-1	4.06	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	9.4	0.349	G	
P35-14MGT-40	35	6.141	6.031	6.820	AF-1	4.95	-	1.81	1.25	0	2.13	0.88	1.06	2012	0.500	2.125	10.0	0.269	G	
P36-14MGT-40	36	6.316	6.206	6.875	AF-1	4.69	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	10.5	0.444	G	
P37-14MGT-40	37	6.492	6.382	7.170	AF-1	5.27	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	11.7	0.392	G	
P38-14MGT-40	38	6.667	6.557	7.219	AF-1	4.94	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	12.2	0.565	G	
P39-14MGT-40	39	6.842	6.732	7.520	AF-1	5.54	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	13.7	0.502	G	
P40-14MGT-40	40	7.018	6.908	7.500	AF-1	5.06	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	14.2	0.713	G	
P42-14MGT-40	42	7.369	7.259	8.040	AF-1	6.16	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	16.0	0.691	G	
P44-14MGT-40	44	7.720	7.610	8.343	AF-1	6.14	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	17.6	1.046	G	
P46-14MGT-40	46	8.071	7.961	8.420	AF-1	6.88	-	1.85	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	21.0	1.026	G	
P48-14MGT-40	48	8.421	8.311	8.937	AF-1	6.50	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	22.0	1.527	G	
P50-14MGT-40	50	8.772	8.662	9.290	DF-1	7.44	4.88	1.81	1.75	0.19	2.13	0.19	1.06	2517	0.500	2.688	25.0	0.954	G	
P52-14MGT-40	52	9.123	9.013	9.687	AF-1	7.18	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	26.5	2.126	G	
P56-14MGT-40	56	9.825	9.715	10.375	AF-1	7.88	-	1.81	1.75	0	2.13	0.38	1.06	2517	0.500	2.688	31.3	2.878	G	
P60-14MGT-40	60	10.527	10.417	11.062	AF-1	8.50	-	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	28.9	3.177	G	
P64-14MGT-40	64	11.229	11.119	11.750	AF-1	9.25	-	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	31.0	3.872	G	
P68-14MGT-40	68	11.930	11.820	12.500	DF-1	10.00	6.25	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	31.3	4.446	G	
P72-14MGT-40	72	12.632	12.522	13.187	DF-1	10.69	6.25	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	33.9	5.410	G	
P80-14MGT-40	80	14.036	13.926	14.625	DF-3	12.53	5.50	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	33.7	7.474	G	
P90-14MGT-40	90	15.790	15.680	-	D-3	14.25	5.50	1.81	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	39.7	9.396	G	
P112-14MGT-40	112	19.650	19.540	-	A-3	18.09	-	-	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	100.5	29.660	G	
P144-14MGT-40	144	25.264	25.154	-	A-3	23.65	-	-	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	154.1	75.160	G	
P168-14MGT-40	168	29.475	29.365	-	A-3	27.50	-	-	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	133.2	113.300	G	
P192-14MGT-40	192	33.686	33.576	-	A-3	31.75	-	-	2.00	0	2.13	0.13	1.06	3020	0.875	3.250	167.6	189.800	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.





# 14mm Pitch PowerGrip® GT<sup>®</sup>2 Sprocket Specifications

Sprocket Number	Number of Teeth			Diameters (in)			Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Matl. Spec.
	Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size	Bore Sizes					
														Min.	Max.				
P28-14MGT-55	28	4.912	4.802	5.560	AF-1	3.13	—	2.43	1.25	0	2.75	1.50	1.38	2012	0.500	2.125	7.4	0.194	G
P29-14MGT-55	29	5.088	4.978	5.560	AF-1	3.13	—	2.43	1.25	0	2.75	1.50	1.38	2012	0.500	2.125	8.4	0.231	G
P30-14MGT-55	30	5.263	5.153	6.125	AF-1	3.80	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	7.4	0.237	G
P32-14MGT-55	32	5.614	5.504	6.125	AF-1	3.92	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	9.3	0.327	G
P34-14MGT-55	34	5.965	5.855	6.500	AF-1	4.06	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	11.2	0.437	G
P36-14MGT-55	36	6.316	6.206	6.875	AF-1	4.69	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	12.4	0.54	G
P38-14MGT-55	38	6.669	6.557	7.219	AF-1	4.94	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	14.4	0.686	G
P40-14MGT-55	40	7.018	6.908	7.500	AF-1	5.06	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	16.7	0.871	G
P44-14MGT-55	44	7.720	7.610	8.343	AF-1	6.12	—	2.43	1.75	0	2.75	1.00	1.38	2517	0.500	2.688	19.9	1.234	G
P48-14MGT-55	48	8.421	8.311	8.937	AF-1	6.50	—	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	24.4	1.84	G
P52-14MGT-55	52	9.123	9.013	9.687	AF-1	7.18	—	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	29.6	2.573	G
P56-14MGT-55	56	9.825	9.715	10.375	AF-1	7.88	—	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	35.3	3.489	G
P60-14MGT-55	60	10.527	10.417	11.062	AF-1	8.50	—	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	41.6	4.647	G
P64-14MGT-55	64	11.229	11.119	11.750	AF-1	9.25	—	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	47.9	6.012	G
P68-14MGT-55	68	11.930	11.820	12.500	DF-1	10.00	6.25	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	40.2	5.909	G
P72-14MGT-55	72	12.632	12.522	13.187	DF-1	10.69	6.25	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	45.1	7.387	G
P80-14MGT-55	80	14.036	13.926	14.625	DF-3	12.00	5.50	2.43	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	41.6	9.021	G
P90-14MGT-55	90	15.790	15.680	—	D-3	14.22	5.50	—	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	45.0	12.36	G
P112-14MGT-55	112	19.650	19.540	—	D-2	18.04	6.25	—	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	116.7	36.86	G
P144-14MGT-55	144	25.264	25.154	—	D-3	23.38	6.25	—	2.00	0	2.75	0.75	1.38	3020	0.875	3.250	98.0	65.38	G
P168-14MGT-55	168	29.475	29.365	—	D-3	27.50	6.25	—	2.00	0.19	2.75	0.56	1.38	3020	0.875	3.250	145.5	150.2	G
P192-14MGT-55	192	33.686	33.576	—	C-3	31.93	6.56	—	3.50	0	2.75	0.75	1.38	3535	1.188	3.938	432.3	404.3	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 14mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.		
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size				Bore Sizes	
																		Min.	Max.
P28-14MGT-85	28	4.912	4.802	5.560	AF-1	3.13	—	3.68	1.25	1.31	4.00	1.44	2.00	2012	0.500	2.125	10.5	0.278	G
P29-14MGT-85	29	5.088	4.978	5.560	AF-1	3.13	—	3.68	1.25	1.31	4.00	1.44	2.00	2012	0.500	2.125	11.9	0.332	G
P30-14MGT-85	30	5.263	5.153	6.125	AF-1	3.78	—	3.68	1.75	0.50	4.00	1.75	2.00	2517	0.500	2.688	10.2	0.332	G
P32-14MGT-85	32	5.614	5.504	6.125	AF-1	3.92	—	3.68	1.75	0.81	4.00	1.44	2.00	2517	0.500	2.688	12.7	0.459	G
P34-14MGT-85	34	5.965	5.855	6.500	AF-1	4.06	—	3.68	1.75	0.81	4.00	1.44	2.00	2517	0.500	2.688	15.3	0.614	G
P36-14MGT-85	36	6.316	6.206	6.875	AF-1	4.69	—	3.68	2.00	0.53	4.00	1.47	2.00	3020	0.875	3.250	14.4	0.694	D
P38-14MGT-85	38	6.669	6.557	7.219	AF-1	4.94	—	3.68	2.00	0.53	4.00	1.47	2.00	3020	0.875	3.250	17.0	0.897	G
P40-14MGT-85	40	7.018	6.908	7.500	AF-1	5.06	—	3.68	2.00	0.53	4.00	1.47	2.00	3020	0.875	3.250	20.3	1.161	G
P44-14MGT-85	44	7.720	7.610	8.343	AF-1	6.12	—	3.68	2.00	0.53	4.00	1.47	2.00	3020	0.875	3.250	23.6	1.615	G
P48-14MGT-85	48	8.421	8.311	8.937	AF-1	6.50	—	3.68	2.00	0.53	4.00	1.47	2.00	3020	0.875	3.250	30.6	2.432	G
P52-14MGT-85	52	9.123	9.013	9.687	AF-1	7.18	—	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	36.6	3.356	G
P56-14MGT-85	56	9.825	9.715	10.375	AF-1	7.88	—	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	52.4	5.300	G
P60-14MGT-85	60	10.527	10.417	11.062	AF-1	8.50	—	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	62.8	7.128	G
P64-14MGT-85	64	11.229	11.119	11.750	AF-1	9.25	—	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	73.6	9.334	G
P68-14MGT-85	68	11.930	11.820	12.500	DF-1	10.00	7.00	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	63.3	9.169	G
P72-14MGT-85	72	12.632	12.522	13.187	AF-1	10.69	—	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	97.4	15.19	G
P80-14MGT-85	80	14.036	13.926	14.625	DF-2	12.13	7.00	3.68	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	62.9	13.04	G
P90-14MGT-85	90	15.790	15.680	—	D-2	14.15	7.00	—	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	71.5	18.14	G
P112-14MGT-85	112	19.650	19.540	—	D-3	17.97	6.56	—	3.50	0	4.00	0.50	2.00	3535	1.188	3.938	131.2	44.18	D
P144-14MGT-85	144	25.264	25.154	—	D-3	23.40	7.63	—	4.00	0	4.00	0	2.00	4040	1.438	4.438	137.4	92.1	G
P168-14MGT-85	168	29.475	29.365	—	D-3	27.70	7.63	—	4.00	0	4.00	0	2.00	4040	1.438	4.438	192.2	194.5	G
P192-14MGT-85	192	33.686	33.576	—	D-3	31.87	7.63	—	4.00	0	4.00	0	2.00	4040	1.438	4.438	448.0	444.6	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 14mm Pitch PowerGrip® GT®2 Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Bushing Size	Bore Sizes		Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Matl. Spec.
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	M	F-CL	Min.	Max.						
P28-14MGT-115-MPB	28	4.912	4.802	5.562	3.13	3.69	4.93	5.00	1.20	5.30	1.50	2.65	MPB	1.250	2.688	22.2	0.508	D			
P29-14MGT-115-MPB	29	5.088	4.978	5.562	3.13	3.69	4.93	5.00	1.20	5.30	1.50	2.65	MPB	1.250	2.688	24.0	0.585	D			
P30-14MGT-115	30	5.263	5.153	5.763	3.70	—	4.93	1.75	1.75	5.25	1.75	2.63	2517	0.500	2.688	13.4	0.438	G			
P32-14MGT-115	32	5.614	5.504	6.114	3.94	—	4.93	1.75	1.75	5.25	1.75	2.63	2517	0.500	2.688	16.0	0.587	G			
P34-14MGT-115	34	5.965	5.855	6.465	4.06	—	4.93	1.75	1.75	5.25	1.75	2.63	2517	0.500	2.688	19.5	0.790	G			
P36-14MGT-115	36	6.316	6.206	6.816	4.74	—	4.93	2.00	1.63	5.26	1.63	2.63	3020	0.875	3.250	17.9	0.876	G			
P38-14MGT-115	38	6.669	6.557	7.167	5.08	—	4.93	2.00	1.63	5.26	1.63	2.63	3020	0.875	3.250	20.3	1.100	G			
P40-14MGT-115	40	7.018	6.908	7.518	5.43	—	4.93	2.00	1.63	5.26	1.63	2.63	3020	0.875	3.250	22.9	1.357	G			
P44-14MGT-115	44	7.720	7.610	8.395	6.13	—	4.93	3.50	0.88	5.26	0.88	2.63	3535	1.188	3.938	30.3	2.144	G			
P48-14MGT-115	48	8.421	8.311	8.941	6.50	—	4.93	3.50	0.88	5.26	0.88	2.63	3535	1.188	3.938	40.3	3.277	G			
P52-14MGT-115	52	9.123	9.013	9.687	7.18	—	4.93	4.00	0.63	5.26	0.63	2.63	4040	1.438	4.438	46.8	4.545	G			
P56-14MGT-115	56	9.825	9.715	10.355	7.88	—	4.93	4.00	0.63	5.26	0.63	2.63	4040	1.438	4.438	58.1	6.335	G			
P60-14MGT-115	60	10.527	10.417	11.067	8.50	—	4.93	4.00	0.63	5.26	0.63	2.63	4040	1.438	4.438	70.4	8.589	G			
P64-14MGT-115	64	11.229	11.119	11.750	9.25	—	4.93	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	82.4	11.47	G			
P68-14MGT-115	68	11.930	11.820	12.500	10.00	—	4.93	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	97.2	14.91	G			
P72-14MGT-115	72	12.632	12.522	13.066	10.70	—	4.93	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	113.2	19.06	G			
P80-14MGT-115	80	14.036	13.926	14.620	12.13	—	4.93	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	147.5	29.66	G			
P90-14MGT-115	90	15.790	15.680	—	14.11	9.50	—	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	116.9	28.30	G			
P112-14MGT-115	112	19.650	19.540	—	17.94	9.50	—	4.50	0	5.25	0.75	2.63	4545	1.938	4.938	173.3	64.72	G			
P144-14MGT-115	144	25.264	25.154	—	9.50	17.94	—	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	172.2	119.8	G			
P168-14MGT-115	168	29.475	29.365	—	27.66	8.63	—	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	223.4	243.3	G			
P192-14MGT-115	192	33.686	33.576	—	31.83	8.63	—	4.50	0.38	5.26	0.38	2.63	4545	1.938	4.938	475.0	496.5	G			
P216-14MGT-115	216	37.896	37.786	—	36.00	13.06	—	5.00	0	5.25	0.25	2.63	6050	4.438	6.000	378.0	686.1	G			

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 14mm Pitch PowerGrip® GT<sup>2</sup> Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mtrl. Spec.			
		Pitch	O.D.	Flange Ref.	Design Type	A	B	C	D	E	F	M	F-CL	Bushing Size				Bore Sizes		
														Min.				Max.	Min.	Max.
P36-14MGT-170-MPB	36	6.316	6.206	6.816	6F-1	4.69	5.00	7.06	6.00	1.21	7.42	2.63	3.71	MPB	1.500	3.375	47.3	1.849	D	
P38-14MGT-170-MPB	38	6.667	6.557	7.167	6F-1	4.94	5.38	7.06	6.00	1.21	7.42	2.63	3.71	MPB	1.500	3.375	53.5	2.321	D	
P40-14MGT-170	40	7.018	6.908	7.518	AF-1	5.54	—	7.06	3.50	1.94	7.38	1.94	3.69	3535	1.188	3.938	28.6	1.780	G	
P44-14MGT-170	44	7.720	7.610	8.395	AF-1	6.06	—	7.06	3.50	1.94	7.38	1.94	3.69	3535	1.188	3.938	38.9	2.828	G	
P48-14MGT-170	48	8.421	8.311	8.941	AF-1	6.50	—	7.06	3.50	1.94	7.38	1.94	3.69	3535	1.188	3.938	51.0	4.283	G	
P52-14MGT-170	52	9.123	9.013	9.687	AF-1	7.18	—	7.06	4.00	1.13	7.38	2.25	3.69	4040	1.438	4.438	58.6	5.877	G	
P56-14MGT-170	56	9.825	9.715	10.355	AF-1	7.88	—	7.06	4.00	1.13	7.38	2.25	3.69	4040	1.438	4.438	70.9	8.051	G	
P60-14MGT-170	60	10.527	10.417	11.067	AF-1	8.50	—	7.06	4.50	0.75	7.38	2.13	3.69	4545	1.938	4.938	82.9	10.85	G	
P64-14MGT-170	64	11.229	11.119	11.750	AF-1	9.53	—	7.06	4.50	0.63	7.38	2.25	3.69	4545	1.938	4.938	94.5	13.71	G	
P68-14MGT-170	68	11.930	11.820	12.500	AF-1	10.00	—	7.06	4.50	0.63	7.38	2.25	3.69	4545	1.938	4.938	113.0	18.15	G	
P72-14MGT-170	72	12.632	12.522	13.066	AF-1	10.69	—	7.06	4.50	0.63	7.38	2.25	3.69	4545	1.938	4.938	130.1	23.00	G	
P80-14MGT-170	80	14.036	13.926	14.625	AF-1	12.13	—	7.06	4.50	1.04	7.38	1.84	3.69	4545	1.938	4.938	166.2	35.12	G	
P90-14MGT-170	90	15.790	15.680	—	D-1	14.05	9.00	—	4.50	0.63	7.38	2.25	3.69	4545	1.938	4.938	159.2	42.03	G	
P112-14MGT-170	112	19.650	19.540	—	D-1	17.87	11.39	—	4.50	0	7.63	3.13	3.82	4545	1.938	4.938	215.1	81.3	G	
P144-14MGT-170	144	25.264	25.154	—	D-3	23.31	13.02	—	5.00	1.19	7.38	1.19	3.69	6050	4.438	6.000	264.0	207.9	G	
P168-14MGT-170	168	29.475	29.365	—	D-2	27.59	13.02	—	5.00	1.19	7.38	1.19	3.69	6050	4.438	6.000	462.0	384.2	G	
P192-14MGT-170	192	33.686	33.576	—	D-3	31.76	13.02	—	5.00	1.19	7.38	1.19	3.69	6050	4.438	6.000	616.0	655.7	G	
P216-14MGT-170	216	37.896	37.786	—	D-2	35.93	13.02	—	5.00	1.19	7.38	1.19	3.69	6050	4.438	6.000	563.0	851.7	D	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

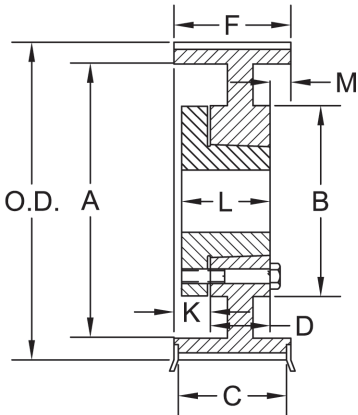
NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.

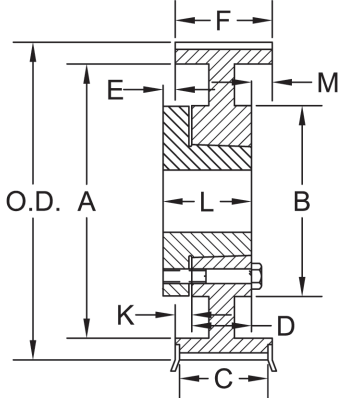


For 20mm Pitch PowerGrip® HTD® Belts

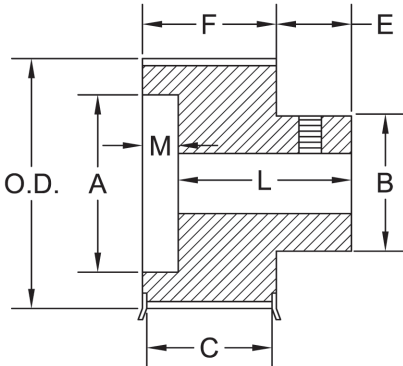
Type A



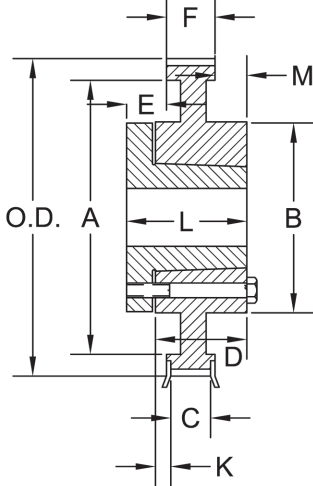
Type D



Type F

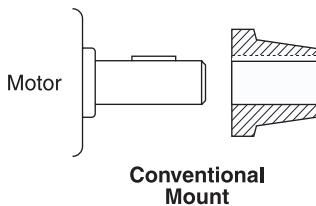
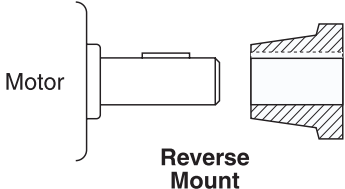


Type G



Bushing Mounting

QD® Bushing Types M - S  
mount in a  
Conventional manner only.



\* QD is a trademark of Emerson Electric

# 20mm Pitch PowerGrip® HTD® Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mati. Spec.		
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	K	L	M	Bushing Size				Bore Sizes	
															Min.					Max.
P34-20M-115	34	8.522	8.352	9.438	A-1	6.75	0	5.00	2.50	0.06	5.38	1.44	3.75	1.44	F	1.000	4.000	36.5	2.820	G
P36-20M-115	36	9.023	8.853	9.844	A-1	6.81	0	5.00	2.50	0.06	5.38	1.44	3.75	1.44	F	1.000	4.000	46.3	3.881	G
P38-20M-115	38	9.524	9.354	10.438	A-1	7.31	0	5.00	2.50	0.06	5.38	1.44	3.75	1.44	F	1.000	4.000	51.0	4.833	G
P40-20M-115	40	10.026	9.856	10.813	A-1	7.88	0	5.00	2.50	0.06	5.38	1.44	3.75	1.44	F	1.000	4.000	57.4	5.878	G
P44-20M-115	44	11.028	10.858	11.813	A-1	8.81	0	5.00	2.50	0.06	5.38	1.44	3.75	1.44	F	1.000	4.000	70.8	8.681	G
P48-20M-115	48	12.031	11.861	12.781	D-1	9.81	0	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	90.9	13.16	G
P52-20M-115	52	13.033	12.863	13.750	D-1	10.63	0	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	110.0	18.56	G
P56-20M-115	56	14.036	13.866	14.750	D-2	11.75	9.00	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	106.0	20.02	G
P60-20M-115	60	15.038	14.868	15.906	D-2	12.81	9.00	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	116.0	25.09	G
P64-20M-115	64	16.041	15.871	16.906	D-2	13.81	9.00	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	127.0	31.22	G
P68-20M-115	68	17.043	16.873	17.906	D-2	14.75	9.00	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	148.0	41.30	G
P72-20M-115	72	18.046	17.876	18.875	D-2	15.59	9.00	5.00	3.19	0.38	5.38	1.19	4.63	1.00	J	1.500	4.500	186.0	52.29	G
P80-20M-115	80	20.051	19.881	20.875	D-2	17.75	11.38	5.00	3.19	1.50	5.38	0.19	6.75	0	M	2.000	5.500	237.0	81.91	G
P90-20M-115	90	22.557	22.387	23.406	D-2	20.31	11.38	5.00	3.19	1.50	5.38	0.19	6.75	0	M	2.000	5.500	275.0	120.1	G
P112-20M-115	112	28.071	27.901	-	D-2	26.38	11.38	5.00	3.19	1.50	5.38	0.19	6.75	0	M	2.000	5.500	477.0	273.2	G
P144-20M-115	144	36.092	35.922	-	G-3	34.38	12.00	5.00	6.25	2.00	5.38	0	8.13	0.88	N	2.438	5.875	612.0	408.3	G
P168-20M-115	168	42.107	41.937	-	G-3	40.38	12.00	5.00	6.25	2.00	5.38	0	8.13	0.88	N	2.438	5.875	648.0	606.1	G
P192-20M-115	192	48.122	47.952	-	G-3	46.25	12.00	5.00	6.25	2.00	5.38	0	8.13	0.88	N	2.438	5.875	786.0	1068	G
P216-20M-115	216	54.138	53.968	-	G-3	52.25	12.00	5.00	6.25	2.00	5.38	0	8.13	0.88	N	2.438	5.875	907.0	1555	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 20mm Pitch PowerGrip® HTD® Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)											Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mati. Spec.	
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	K	L	M	Bore Sizes					Bushing Size
															Min.	Max.				
P34-20M-170	34	8.522	8.352	9.438	F-1	6.50	6.50	7.13	-	7.50	-	6.50	2.25	MPB	2.125	4.250	87.2	5.642	G	
P36-20M-170	36	9.023	8.853	9.844	F-1	7.00	7.00	7.13	-	7.50	-	6.50	2.25	MPB	2.125	4.500	98.7	7.136	G	
P38-20M-170	38	9.524	9.354	10.438	A-1	7.38	0	7.13	3.19	7.50	2.19	4.63	2.13	J	1.500	4.500	64.0	6.369	G	
P40-20M-170	40	10.026	9.856	10.813	A-1	7.75	0	7.13	3.19	7.50	2.31	4.63	2.00	J	1.500	4.500	73.4	8.032	G	
P44-20M-170	44	11.028	10.858	11.813	A-1	8.88	0	7.13	3.19	7.50	2.19	4.63	2.13	J	1.500	4.500	88.1	11.51	G	
P48-20M-170	48	12.031	11.861	12.781	D-1	9.88	0	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	120.0	18.50	G	
P52-20M-170	52	13.033	12.863	13.750	D-1	10.69	0	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	149.0	26.45	G	
P56-20M-170	56	14.036	13.866	14.750	D-1	11.81	0	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	177.0	35.64	G	
P60-20M-170	60	15.038	14.868	15.906	D-1	12.88	0	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	209.0	47.39	G	
P64-20M-170	64	16.041	15.871	16.906	D-1	13.88	0	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	236.0	61.79	G	
P68-20M-170	68	17.043	16.873	17.906	D-2	14.81	11.38	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	214.0	58.93	G	
P72-20M-170	72	18.046	17.876	18.875	D-2	15.59	11.38	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	238.0	73.88	G	
P80-20M-170	80	20.051	19.881	20.875	D-2	17.81	11.38	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	262.0	98.45	G	
P90-20M-170	90	22.557	22.387	23.406	D-2	20.38	11.38	7.13	5.19	7.50	1.50	6.75	0.81	M	2.000	5.500	303.0	143.5	G	
P112-20M-170	112	28.071	27.901	-	D-2	26.25	12.00	7.13	6.25	7.50	1.25	8.13	0	N	2.438	5.875	473.0	323.7	G	
P144-20M-170	144	36.092	35.922	-	D-3	34.25	14.00	7.13	6.25	7.50	1.25	8.13	0	N	2.438	5.875	520.0	515.3	G	
P168-20M-170	168	42.107	41.937	-	G-3	40.25	14.00	7.13	7.25	7.50	1.06	9.38	0.81	P	2.938	7.000	619.0	804.9	G	
P192-20M-170	192	48.122	47.952	-	G-3	46.25	14.00	7.13	7.25	7.50	1.06	9.38	0.81	P	2.938	7.000	783.0	1315	G	
P216-20M-170	216	54.138	53.968	-	G-3	52.13	14.00	7.13	7.25	7.50	1.06	9.38	0.81	P	2.938	7.000	902.0	1997	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron

Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



# 20mm Pitch PowerGrip® HTD® Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mati. Spec.			
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	K	L	M	Bushing Size				Bore Sizes		
															Min.				Max.	Min.	Max.
P38-20M-230	38	9.524	9.354	10.438	F-1	7.56	7.50	9.50	-	1.25	9.88	-	7.50	3.63	MPB	2.875	4.750	128.0	11.06	G	
P40-20M-230	40	10.026	9.856	10.813	F-1	8.00	8.00	9.50	-	1.25	9.88	-	8.50	2.63	MPB	2.875	5.250	156.0	14.35	G	
P44-20M-230	44	11.028	10.858	11.813	F-1	8.94	8.25	9.50	-	1.25	9.88	-	8.50	2.63	MPB	2.875	6.000	189.0	21.65	G	
P48-20M-230	48	12.031	11.861	12.781	A-1	9.94	0	9.50	5.19	0.31	9.88	2.00	6.75	2.69	M	2.000	5.500	140.0	21.86	G	
P52-20M-230	52	13.033	12.863	13.750	A-1	10.66	0	9.50	5.19	0.31	9.88	2.00	6.75	2.69	M	2.000	5.500	175.0	31.64	G	
P56-20M-230	56	14.036	13.866	14.750	A-1	11.63	0	9.50	5.19	0.31	9.88	2.00	6.75	2.69	M	2.000	5.500	204.0	42.74	G	
P60-20M-230	60	15.038	14.868	15.906	A-1	12.94	0	9.50	5.19	0.31	9.88	2.00	6.75	2.69	M	2.000	5.500	234.0	54.44	G	
P64-20M-230	64	16.041	15.871	16.906	A-1	13.94	0	9.50	5.19	0.31	9.88	2.00	6.75	2.69	M	2.000	5.500	270.0	70.49	G	
P68-20M-230	68	17.043	16.873	17.906	D-1	14.88	0	9.50	6.25	0.19	9.88	11.19	8.13	11.19	N	2.438	5.875	341.0	98.76	G	
P72-20M-230	72	18.046	17.876	18.875	D-1	15.59	0	9.50	6.25	0.19	9.88	11.19	8.13	11.19	N	2.438	5.875	410.0	127.3	G	
P80-20M-230	80	20.051	19.881	20.875	D-2	17.88	12.00	9.50	6.25	0.19	9.88	11.19	8.13	11.19	N	2.438	5.875	343.0	128.9	G	
P90-20M-230	90	22.557	22.387	23.406	D-2	20.44	12.00	9.50	6.25	0.19	9.88	11.19	8.13	11.19	N	2.438	5.875	398.0	187.5	G	
P112-20M-230	112	28.071	27.901	-	D-2	26.25	12.00	9.50	6.25	0.19	9.88	11.19	8.13	11.19	N	2.438	5.875	664.0	368.8	G	
P144-20M-230	144	36.092	35.922	-	D-3	34.25	14.00	9.50	7.25	0.94	9.88	0.94	9.38	0.94	P	2.938	7.000	886.0	637.1	G	
P168-20M-230	168	42.107	41.937	-	D-3	40.25	14.00	9.50	7.25	0.94	9.88	0.94	9.38	0.94	P	2.938	7.000	934.0	967.5	G	
P192-20M-230	192	48.122	47.952	-	G-3	46.00	17.00	9.50	9.00	1.00	9.88	1.50	11.38	0.63	W	4.000	8.500	1429.0	2203	G	
P216-20M-230	216	54.138	53.968	-	G-3	52.00	17.00	9.50	9.00	1.00	9.88	1.50	11.38	0.63	W	4.000	8.500	1317.0	2576	G	

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.





# 20mm Pitch PowerGrip® HTD® Sprocket Specifications

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)											Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mati. Spec.		
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	K	L	M	Bushing Size					Bore Sizes	
															Min.	Max.				Min.	Max.
P52-20M-290	52	13.033	12.863	13.750	A-1	10.81	0	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	202.0	37.46	G	
P56-20M-290	56	14.036	13.866	14.750	A-1	11.88	0	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	237.0	50.16	G	
P60-20M-290	60	15.038	14.868	15.906	A-1	13.06	0	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	276.0	65.49	G	
P64-20M-290	64	16.041	15.871	16.906	A-1	14.00	0	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	320.0	84.94	G	
P68-20M-290	68	17.043	16.873	17.906	A-1	14.94	0	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	368.0	109.1	G	
P72-20M-290	72	18.046	17.876	18.875	A-2	15.59	12.00	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	404.0	120.6	G	
P80-20M-290	80	20.051	19.881	20.875	A-2	17.91	12.00	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	376.0	146.7	G	
P90-20M-290	90	22.557	22.387	23.406	A-2	20.50	12.00	11.88	6.25	0.50	12.25	2.50	8.13	3.50	N	2.438	5.875	431.0	210.6	G	
P112-20M-290	112	28.071	27.901	-	A-2	26.13	14.00	11.88	7.25	0.25	12.25	2.50	9.38	2.50	P	2.938	7.000	799.0	447.8	G	
P144-20M-290	144	36.092	35.922	-	A-3	34.00	14.00	11.88	7.25	0.25	12.25	2.50	9.38	2.50	P	2.938	7.000	1004.0	818.9	G	
P168-20M-290	168	42.107	41.937	-	A-3	40.00	17.00	11.88	9.00	0.19	12.25	2.69	11.38	0.56	W	4.000	8.500	1410.0	1669	G	
P192-20M-290	192	48.122	47.952	-	A-3	46.00	17.00	11.88	9.00	0.19	12.25	2.69	11.38	0.56	W	4.000	8.500	1552.0	2491	G	
P216-20M-290	216	54.138	53.968	-	A-3	52.00	17.00	11.88	9.00	0.19	12.25	2.69	11.38	0.56	W	4.000	8.500	1441.0	2991	G	

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)											Approx. Wt. (lb)	Approx. WR <sup>2</sup>	Mati. Spec.	
		Pitch	O.D.	Flange Ref.		A	B	C	D	E	F	K	L	M	Bushing Size	Bore Sizes				
																Min.				Max.
P52-20M-340	52	13.033	12.863	13.750	A-1	10.81	0	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	219.0	41.49	G
P56-20M-340	56	14.036	13.866	14.750	A-1	11.88	0	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	258.0	55.14	G
P60-20M-340	60	15.038	14.868	15.906	A-1	13.06	0	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	294.0	70.61	G
P64-20M-340	64	16.041	15.871	16.906	A-1	14.06	0	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	339.0	91.26	G
P68-20M-340	68	17.043	16.873	17.906	A-1	15.00	0	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	389.0	117.1	G
P72-20M-340	72	18.046	17.876	18.875	A-2	15.59	12.00	13.88	6.25	0.50	14.25	2.50	8.13	5.50	N	2.438	5.875	438.0	133.5	G
P80-20M-340	80	20.051	19.881	20.875	A-2	18.00	14.00	13.88	7.25	1.25	14.25	3.50	9.38	3.50	P	2.938	7.000	462.0	183.9	G
P90-20M-340	90	22.557	22.387	23.406	A-2	20.56	14.00	13.88	7.25	1.25	14.25	3.50	9.38	3.50	P	2.938	7.000	507.0	245.1	G
P112-20M-340	112	28.071	27.901	-	A-2	26.09	14.00	13.88	7.25	1.25	14.25	3.50	9.38	3.50	P	2.938	7.000	870.0	492.1	G
P144-20M-340	144	36.092	35.922	-	A-3	34.00	17.00	13.88	9.00	0.13	14.25	2.63	11.38	2.63	W	4.000	8.500	1215.0	982.1	G
P168-20M-340	168	42.107	41.937	-	A-3	40.00	17.00	13.88	9.00	0.13	14.25	2.63	11.38	2.63	W	4.000	8.500	1514.0	1829	G
P192-20M-340	192	48.122	47.952	-	D-3	46.00	19.00	13.88	12.00	2.38	14.25	1.13	15.25	1.13	S	5.500	10.000	1817.0	2847	G
P216-20M-340	216	54.138	53.968	-	D-3	51.88	19.00	13.88	12.00	2.38	14.25	1.13	15.25	1.13	S	5.500	10.000	1717.0	3625	G

Material Spec: S - Steel SS - Sintered Steel G - Grey Iron D - Ductile Iron  
 Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

NOTES: • Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore • Weights and WR<sup>2</sup> for Bushed Sprockets do not include bushings. • WR<sup>2</sup> values have lb-ft<sup>2</sup> units.

Details shown which do not affect drive function may be changed without notification.



**0.200" Pitch, XL**

For 1/4" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
110XL025	10	0.637	0.617
11XL025	11	0.700	0.680
12XL025	12	0.764	0.744
13XL025	13	0.828	0.808
14XL025	14	0.891	0.871
15XL025	15	0.955	0.935
16XL025	16	1.019	0.999
18XL025	18	1.146	1.126
20XL025	20	1.273	1.253
21XL025	21	1.337	1.317
22XL025	22	1.401	1.381
24XL025	24	1.528	1.508
26XL025	26	1.655	1.635
28XL025	28	1.783	1.763
30XL025	30	1.910	1.890

**0.200" Pitch, XL**

For 1/4" and 3/8" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
10XL037	10	.637	.617
11XL037	11	0.700	0.680
12XL037	12	0.764	0.744
13XL037	13	0.828	0.808
14XL037	14	0.891	0.871
15XL037	15	0.955	0.935
16XL037	16	1.019	0.999
17XL037	17	1.082	1.062
18XL037	18	1.146	1.126
19XL037	19	1.210	1.190
20XL037	20	1.273	1.253
21XL037	21	1.337	1.317
22XL037	22	1.401	1.381
23XL037	23	1.464	1.444
24XL037	24	1.528	1.508
25XL037	25	1.592	1.572
26XL037	26	1.655	1.635
28XL037	28	1.783	1.763
30XL037	30	1.910	1.890
32XL037	32	2.037	2.017
36XL037	36	2.292	2.272
40XL037	40	2.546	2.526
42XL037	42	2.674	2.654
44XL037	44	2.801	2.781
48XL037	48	3.056	3.036
60XL037	60	3.820	3.800
72XL037	72	4.584	4.564

**0.375" Pitch, L**

For 1/2" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
10L050	10	1.194	1.164
12L050	12	1.432	1.402
13L050	13	1.552	1.522
14L050	14	1.671	1.641
15L050	15	1.790	1.760
16L050	16	1.910	1.880
17L050	17	2.029	1.999
18L050	18	2.149	2.119
19L050	19	2.268	2.238
20L050	20	2.387	2.357
21L050	21	2.507	2.477
22L050	22	2.626	2.596
24L050	24	2.865	2.835
26L050	26	3.104	3.074
28L050	28	3.342	3.312
30L050	30	3.581	3.551
32L050	32	3.820	3.790
36L050	36	4.297	4.267
40L050	40	4.775	4.745
48L050	48	5.730	5.700
60L050	60	7.162	7.132
72L050	72	8.594	8.564
84L050	84	10.027	9.997

**0.375" Pitch, L**

For 3/4" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
10L075	10	1.194	1.164
12L075	12	1.432	1.402
13L075	13	1.552	1.522
14L075	14	1.671	1.641
15L075	15	1.790	1.760
16L075	16	1.910	1.880
17L075	17	2.029	1.999
18L075	18	2.149	2.119
19L075	19	2.268	2.238
20L075	20	2.387	2.357
21L075	21	2.507	2.477
22L075	22	2.626	2.596
24L075	24	2.865	2.835
26L075	26	3.104	3.074
28L075	28	3.342	3.312
30L075	30	3.581	3.551
32L075	32	3.820	3.790
36L075	36	4.297	4.267
40L075	40	4.775	4.745
48L075	48	5.730	5.700
60L075	60	7.162	7.132
72L075	72	8.594	8.564
84L075	84	10.027	9.997

**0.375" Pitch, L**

For 1" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
10L100	10	1.194	1.164
12L100	12	1.432	1.402
13L100	13	1.552	1.522
14L100	14	1.671	1.641
15L100	15	1.790	1.760
16L100	16	1.910	1.880
17L100	17	2.029	1.999
18L100	18	2.149	2.119
19L100	19	2.268	2.238
20L100	20	2.387	2.357
21L100	21	2.507	2.477
22L100	22	2.626	2.596
24L100	24	2.865	2.835
26L100	26	3.104	3.074
28L100	28	3.342	3.312
30L100	30	3.581	3.551
32L100	32	3.820	3.790
36L100	36	4.297	4.267
40L100	40	4.775	4.745
48L100	48	5.730	5.700
60L100	60	7.162	7.132
72L100	72	8.594	8.564
84L100	84	10.027	9.997

**0.500" Pitch, H**

For 3/4" and 1" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
14H100	14	2.228	2.174
16H100	16	2.546	2.492
18H100	18	2.865	2.811
20H100	20	3.183	3.129
22H100	22	3.501	3.447
24H100	24	3.820	3.766
26H100	26	4.138	4.084
28H100	28	4.456	4.402
30H100	30	4.775	4.721
32H100	32	5.093	5.039
40H100	40	6.366	6.312
48H100	48	7.639	7.585
60H100	60	9.549	9.495
72H100	72	11.459	11.405
84H100	84	13.369	13.315
96H100	96	15.279	15.225
120H100	120	19.099	19.045

**0.500" Pitch, H**

For 1 1/2" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
14H150	14	2.228	2.174
16H150	16	2.546	2.492
18H150	18	2.865	2.811
20H150	20	3.183	3.129
22H150	22	3.501	3.447
24H150	24	3.820	3.766
26H150	26	4.138	4.084
28H150	28	4.456	4.402
30H150	30	4.775	4.721
32H150	32	5.093	5.039
40H150	40	6.366	6.312
48H150	48	7.639	7.585
60H150	60	9.549	9.495
72H150	72	11.459	11.405
84H150	84	13.369	13.315
96H150	96	15.279	15.225
120H150	120	19.099	19.045

**0.500" Pitch, H**

For 2" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
16H200	16	2.546	2.492
18H200	18	2.865	2.811
20H200	20	3.183	3.129
22H200	22	3.501	3.447
24H200	24	3.820	3.766
26H200	26	4.138	4.084
28H200	28	4.456	4.402
30H200	30	4.775	4.721
32H200	32	5.093	5.039
40H200	40	6.366	6.312
48H200	48	7.639	7.585
60H200	60	9.549	9.495
72H200	72	11.459	11.405
84H200	84	13.369	13.315
96H200	96	15.279	15.225
120H200	120	19.099	19.045

**0.500" Pitch, H**

For 3" Wide Belts

Pulley Designation	Number of Grooves	Pitch Diameter (in)	Outside Diameter (in)
16H300	16	2.546	2.492
18H300	18	2.865	2.811
20H300	20	3.183	3.129
22H300	22	3.501	3.447
24H300	24	3.820	3.766
26H300	26	4.138	4.084
28H300	28	4.456	4.402
30H300	30	4.775	4.721
32H300	32	5.093	5.039
40H300	40	6.366	6.312
48H300	48	7.639	7.585
60H300	60	9.549	9.495
72H300	72	11.459	11.405
84H300	84	13.369	13.315
96H300	96	15.279	15.225
120H300	120	19.099	19.045



## Sprocket Tolerance Specifications

PowerGrip® sprockets are made to close tolerances. Modifications such as reboring may result in unsatisfactory drive performance. Strict adherence to the standard tolerances (as shown in table below) is highly recommended.

### Sprocket Outside Diameter and Pitch

Outside Diameter Range (in)	Outside Diameter Tolerance (in)	Pitch To Pitch Tolerance (in)	
		Adjacent Grooves	Accumulative Over 90 Degrees
Over 2.000 to and including 4.000	+ 0.004 - 0.000	± 0.001	± 0.0045
Over 4.000 to and including 7.000	+ 0.005 - 0.000	± 0.001	± 0.005
Over 7.000 to and including 12.000	+ 0.006 - 0.000	± 0.001	± 0.006
Over 12.000 to and including 20.000	+ 0.007 - 0.000	± 0.001	± 0.0065
Over 20.000	+ 0.008 - 0.000	± 0.001	± 0.0075

### Sprocket Runout

#### Radial Runout\*

Outside Diameter		Total Eccentricity Total Indicator Reading	
(in)	(mm)	(in)	(mm)
Up to 2	50	0.0025	0.06
Over 2 to 4	50	0.003	0.08
	100		
Over 4 to 8	100	0.004	0.10
	200		
Over 8	200	.0005 per inch O.D. over 8"	.013 per mm O.D. over 200mm
		(may not exceed face diameter tolerance)	

#### Axial Runout\*

For outside diameters 1.0 inches and under ..... 0.001 inches

For each additional inch of outside diameter up through

10.0 inches, add ..... 0.001 inches

For each additional inch of outside diameter

over 10.0 inches, add ..... 0.0005 inches

\* Total Indicator Reading; applies to sprocket without bushing.

### Sprocket and Bushing Keyseat

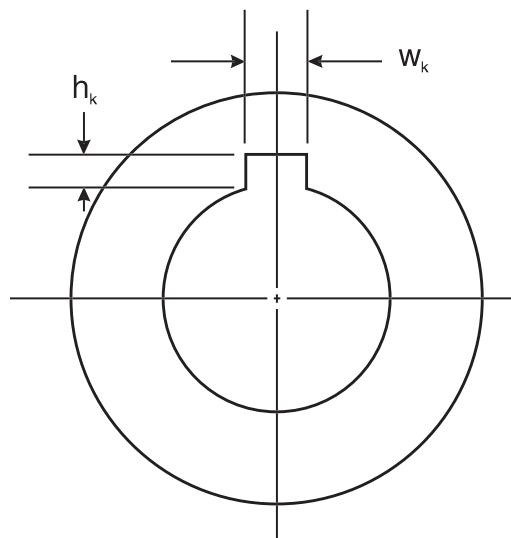
Shaft Diameter (in)	Width, $w_k$ † (in)	Depth, $h_k$ (in) + 0.015 0.000
Up through 7/16 (0.44)	3/32 (0.0938)	3/64 (0.047)
Over 7/16 (0.44) to and incl. 9/16 (0.56)	1/8 (0.125)	1/16 (0.062)
Over 9/16 (0.56) to and incl. 7/8 (0.88)	3/16 (0.1875)	3/32 (0.094)
Over 7/8 (0.88) to and incl. 1 1/4 (1.25)	1/4 (0.250)	1/8 (0.125)
Over 1 1/4 (1.25) to and incl. 1 3/8 (1.38)	5/16 (0.3125)	5/32 (0.156)
Over 1 3/8 (1.38) to and incl. 1 3/4 (1.75)	3/8 (0.375)	3/16 (0.188)
Over 1 3/4 (1.75) to and incl. 2 1/4 (2.25)	1/2 (0.500)	1/4 (0.250)
Over 2 1/4 (2.25) to and incl. 2 3/4 (2.75)	5/8 (0.625)	5/16 (0.312)
Over 2 3/4 (2.75) to and incl. 3 1/4 (3.25)	3/4 (0.750)	3/8 (0.375)
Over 3 1/4 (3.25) to and incl. 3 3/4 (3.75)	7/8 (0.875)	7/16 (0.438)
Over 3 3/4 (3.75) to and incl. 4 1/2 (4.50)	1 (1.000)	1/2 (0.500)
Over 4 1/2 (4.50) to and incl. 5 1/2 (5.50)	1 1/4 (1.250)	5/8 (0.625)

†Tolerance on width,  $w_k$

For width up through 1/2 (0.500) ..... + 0.002, 0.000 inches

For width over 1/2 (0.500) up through 1 (1.000) ..... + 0.003, 0.000 inches

For width over 1 (1.000) ..... + 0.004, 0.000 inches



### Balancing

Stock Sprockets are statically balanced per MPTA (Mechanical Power Transmission Association) Standard Practice for Pulley Balancing SPB-86 using the weight based on the following two criteria:

1. Balance limit (ounces) = Sprocket Weight (lb) x 0.016; or
2. 0.176 ounce (5 grams), whichever is greater.

Caution: Stock sprockets should not be used on drives where rim surface speeds exceed 6,500 fpm. Sprocket construction and materials will determine the dynamic balancing requirements of the sprocket(s) where rim surface speeds exceed 6,500 fpm.

### Sprocket Tooth Profile and Surface Quality

The PowerGrip GT®2 sprocket tooth profile was designed and developed exclusively by The Gates Corporation to operate with the Gates PowerGrip GT3 Belt. See Engineering Section II-3, Tooth Profile, on pages 177-178 for a complete discussion of the performance characteristics of this new tooth profile. The tooth surface should be free of any surface defects and should be 80 microinches finish or better.

### Sprocket Blanks

Sprocket blanks can be grooved by Gates for specially designed, made-to-order sprockets. If those sprockets are supplied in blank form, Gates can perform the "grooving" operation. The blank diameter must be 0.050" larger than the finished sprocket O.D. Contact your local Gates Representative for additional details.

## For Minimum Plain Bore (MPB) Sprockets

When using MPB PowerGrip® GT<sup>2</sup> sprockets in power transmission systems, important guidelines should be followed for proper product finishing and application. Due to the high load carrying capacity and high operating tensions often found in PowerGrip GT3 belt drive systems, it is imperative to use and adhere to industry standard practices.

When finishing MPB sprockets for high performance belt drive systems, care should be taken to ensure proper functionality and performance. General re-bore instructions and specifications are as follows:

1. Materials used in PowerGrip GT2 sprockets are steel, gray iron, and ductile iron. The materials used may vary with the size of the sprocket. See the Sprocket Specification Tables, pages 131-151 for specific materials.
2. The maximum bore diameter specified by the manufacturer for each sprocket size should NOT be exceeded, or a keyway used which reduces the hub thickness to less than its minimum allowable value. See the Sprocket Specification Tables for a listing of recommended bore ranges by sprocket size. Bores exceeding the maximum recommended value for a particular sprocket size can adversely affect the structural integrity, thereby reducing their load-carrying capability.

The minimum metal thickness between the keyway and hub O.D. should be no less than the set screw diameter specified for the corresponding sprocket size. See Figure 1. A listing of minimum set screw diameters is included below.

- P18-5MGT - 8-32
- P19-5MGT thru P22-5MGT - 10-32
- P23-5MGT thru P32-5MGT - 1/4"
- P34-5MGT thru P38-5MGT - 5/16"
- P40-5MGT thru P50-5MGT - 3/8"
- P28-14MGT thru P29-14MGT - 7/16"
- P36-14MGT thru P38-14MGT - 5/8"

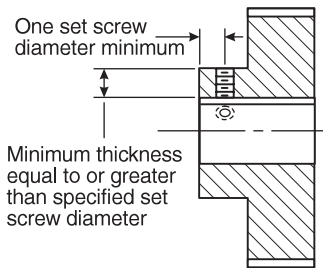


Figure 1 — Minimum Hub Thickness And Set Screw Placement Guidelines

3. The fit between a finished sprocket bore and its mating shaft in a power transmission system must not allow relative movement between the bore and the shaft when the drive is subjected to belt tension and torque loads. This is accomplished, in the case of plain bore sprockets, with the use of set screws and keys and by controlling the fit or clearance between the sprocket bore and its mating shaft. Cyclical, pulsating, or reversing loads may wear the sprocket bore and/or keyway due to the relative movement between the contacting surfaces of the shaft and the bore. The resulting wear may increase the clearance further, if an interference fit is not used.

In order to maximize the performance of high capacity belt drives using plain bore style sprockets, the following for recommendations presented in Table 1 should be followed:

**Class 1 Clearance Fits** should be used when the transmitted load is smooth in nature.

**Interference Fits** should be used for PowerGrip GT3 curvilinear drives *transmitting cyclical, pulsating, or reversing loads*.

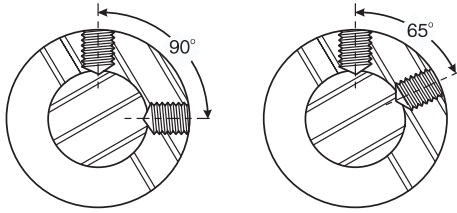
Table 1 - Recommended Shaft / Bore Fits (Inches)

Nominal Bore Range Over - To (Incl.)	Shaft Tol. (min)	Clearance Fits		Interference Fits			
		Class 1 - Smooth Load		Cyclical, Pulsating, Reversing Load			
		Bore Tol. (Plus)	Fit Tol. (Plus)	Bore Tolerance Range (Minus)		Fit Tolerance Range (Minus)	
0.4375 - 0.5626	0.0005	0.0010	0.0015	0.0005	0.0010	0.0000	0.0010
0.5625 - 0.8750	0.0005	0.0010	0.0015	0.0005	0.0010	0.0000	0.0010
0.8750 - 1.2500	0.0005	0.0010	0.0015	0.0005	0.0010	0.0000	0.0010
1.2500 - 1.3750	0.0005	0.0010	0.0015	0.0005	0.0010	0.0000	0.0010
1.3750 - 1.5000	0.0005	0.0010	0.0015	0.0005	0.0010	0.0000	0.0010
1.5000 - 1.7500	0.0010	0.0010	0.0020	0.0010	0.0020	0.0000	0.0020
1.7500 - 2.0000	0.0010	0.0010	0.0020	0.0010	0.0020	0.0000	0.0020
2.0000 - 2.2500	0.0010	0.0015	0.0025	0.0010	0.0020	0.0000	0.0020
2.2500 - 2.7500	0.0010	0.0015	0.0025	0.0010	0.0020	0.0000	0.0020
2.7500 - 3.0000	0.0010	0.0015	0.0025	0.0010	0.0020	0.0000	0.0020
3.0000 - 3.2500	0.0010	0.0015	0.0025	0.0015	0.0030	0.0005	0.0030
3.2500 - 3.7500	0.0010	0.0015	0.0025	0.0015	0.0030	0.0005	0.0030
3.7500 - 4.0000	0.0010	0.0015	0.0025	0.0015	0.0030	0.0005	0.0030
4.0000 - 4.5000	0.0010	0.0015	0.0025	0.0020	0.0035	0.0010	0.0035
4.5000 - 5.0000	0.0010	0.0015	0.0025	0.0020	0.0035	0.0010	0.0035
5.0000 - 5.5000	0.0010	0.0015	0.0025	0.0025	0.0040	0.0015	0.0040
5.5000 - 6.5000	0.0010	0.0015	0.0025	0.0025	0.0040	0.0015	0.0040

Table 1 was extracted in part from AGMA Standard for Bores and Keyways for Flexible Couplings (Inch Series) AGMA 9002-A86 Table.

4. DO NOT chuck or center the sprocket on guide flanges. Soft jaws should be used when chucking on the sprocket teeth. Center (indicate) the sprocket using the sprocket tooth O.D. If chucked on the Rim I.D. or Hub O.D., the sprocket should be centered with respect to the sprocket tooth O.D. Guide flanges are permanently mounted and should not be removed. If original flanges must be removed, they should be replaced with NEW flanges. New guide flanges should be attached securely with care using mechanical fasteners such as screws. **Note: Improper guide flange reassembly may cause serious personal injury and/or mechanical damage.**
5. Set screw holes in the sprocket hub must be placed properly for maximum holding strength. For both standard and shallow keyseats, two (2) set screws should be used as illustrated in Figure 2. The total holding strength of the set screws is dependent upon their placement and design. Generally, one screw should be placed directly over the keyway, and the other screw at ninety degrees (90°) from the keyway, or at sixty-five degrees (65°) from the keyway—a more recent practice that improves holding power. Sometimes four set screws (or two pair) are used for increased holding strength.

## For Minimum Plain Bore (MPB) Sprockets



**Figure 2 — Set Screw Angles**

Each set screw should be placed axially—a minimum of one set screw diameter from the end of the sprocket hub extension. See Figure 1. For recommended set screw tightening torque values see Table 2 below.

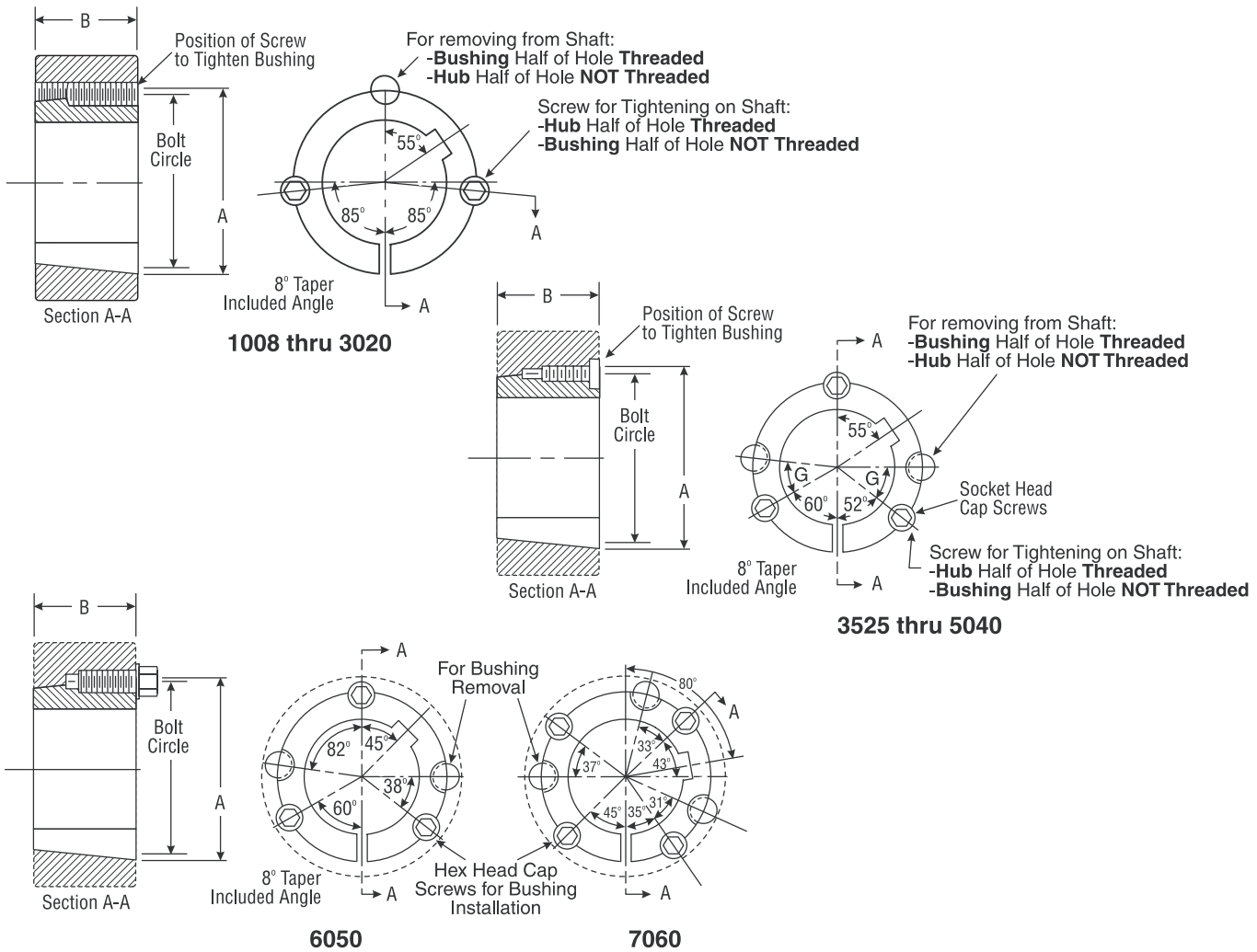
**Table 2 - Recommended Tightening Torque Values For Set Screws**

Set Screw Size	Hex Key Size (in)	Approximate Installation Torque Values (lb-in)
8-32	5/64	20
10-32	3/32	35
1/4	1/8	80
5/16	5/32	160
3/8	3/16	275
7/16	7/32	430
1/2	1/4	615
5/8	5/16	1315

6. After re boring, the sprocket may require rebalancing. Vibration, noise, reduced bearing life, and undue stresses on the mechanical components in the system could result if improper rebalancing practices are used. See Sprocket Specifications, page 153, for recommended sprocket balancing specifications.
7. Standard square or rectangular keys should be used. See page 158 for standard key dimensions.

Refer to Sprocket Specifications, page 153, for specifications and tolerances for sprocket eccentricity, parallelism, and balancing.

# Stock Bushings for Sprockets



## TAPER-LOCK®\* BUSHINGS

Bushing Size	Torque Capacity (lb-in)	Dimensions (in)		Bolt Circle (in)	Mounting Screws			Bore Range (in)			Weight Range (lb)	
		A	B		Qty.	Size	G (deg)	Min. Bore	Max Bore		Max. Bore	Min. Bore
									Standard Keyseat***	Shallow Keyseat**		
1008	1,200	1.386	0.875	1.328	2	1/4 x 1/2	—	0.500	0.875	1.000	0.2	0.3
1108****	1,300	1.511	0.875	1.453	2	1/4 x 1/2	—	0.500	1.000	1.125	0.1	0.3
1210****	3,600	1.875	1.000	1.750	2	3/8 x 5/8	—	0.500	1.250	—	0.4	0.6
1610****	4,300	2.250	1.000	2.125	2	3/8 x 5/8	—	0.500	1.500	1.688	0.5	0.9
1615	4,300	2.25	1.500	2.125	2	3/8 x 5/8	—	0.500	1.500	1.688	0.6	1.3
2012****	7,150	2.750	1.250	2.625	2	7/16 x 7/8	—	0.500	1.875	2.125	0.9	1.7
2517	11,600	3.375	1.750	3.250	2	1/2 x 1	—	0.500	2.250	2.688	1.8	3.7
3020	24,000	4.250	2.000	4.000	2	5/8 x 1 1/4	—	0.875	2.750	3.250	3.3	6.5
3525	44,800	5.000	2.500	4.830	3	1/2 x 1 1/2	39	1.188	3.250	3.938	3.7	10.9
3535	44,800	5.000	3.500	4.830	3	1/2 x 1 1/2	39	1.188	3.250	3.938	5.0	14.8
4030	77,300	5.750	3.000	5.540	3	5/8 x 1 3/4	39	1.438	3.625	4.438	6.4	17.3
4040	77,300	5.750	4.000	5.540	3	5/8 x 1 3/4	40	1.438	3.625	4.438	8.2	22.1
4535	110,000	6.375	3.500	6.130	3	3/4 x 2	40	1.938	4.500	4.938	8.8	23.7
4545	110,000	6.375	4.500	6.130	3	3/4 x 2	40	1.938	4.500	4.938	11.2	30.3
5040	126,000	7.000	4.000	6.720	3	7/8 x 2 1/4	37	2.438	4.500	5.000	15.9	31.5
6050	282,000	9.250	5.000	9.000	3	1 1/4 x 3 1/2	—	4.438	6.000	—	45.0	57.0
7060	416,000	10.250	6.000	10.000	4	1 1/4 x 3 1/2	—	4.938	7.000	—	66.0	87.0

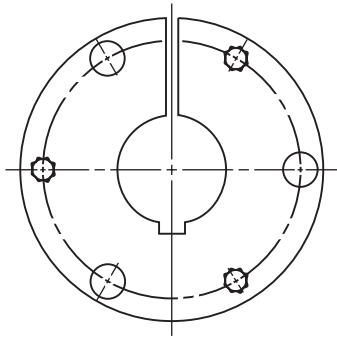
\* Registered trademark of Reliance Electric.

\*\* Key is furnished with each bushing having a shallow keyseat.

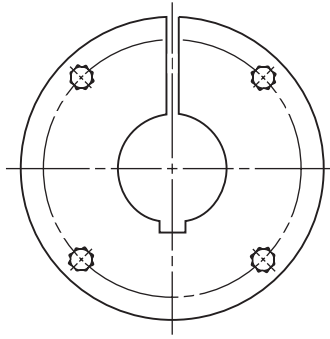
\*\*\* Keys are not furnished with bushings having standard keyseats.

\*\*\*\* Also available in stainless steel construction.

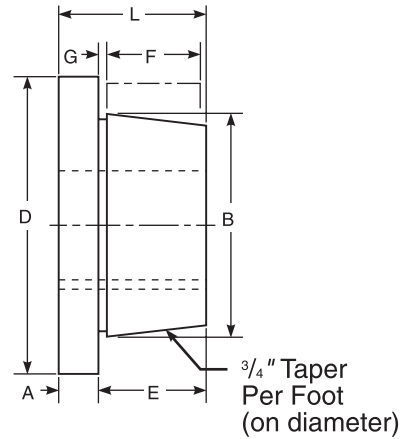
# Stock Bushings for Sprockets – continued



Style E to J



Style M through S



## QD<sup>®</sup>BUSHINGS

Bushing Size	Torque Capacity (lb-in)	Dimensions (in)							Bolt Circle	Cap Screws		Bore Range (in)		Weight Range (lb)	
		A	B	D	E	F	G	L		No.	Size	Min.	Max.	Max. Bore	Min. Bore
E	20,000	0.750	3.834	6.000	1.875	1.625	0.250	2.625	5.000	3	1/2-13 x 2 3/4	0.875	3.500**	9.0	12.3
F	30,000	0.813	4.438	6.625	2.813	2.500	0.344	3.625	5.625	3	9/16-12 x 3 5/8	1.000	4.000*	8.5	19.5
J	45,000	1.000	5.148	7.250	3.500	3.188	0.375	4.625	6.250	3	5/8-11 x 4 1/2	1.438	4.500**	12.8	29.7
M	85,000	1.250	6.500	9.125	5.500	5.188	0.406	6.750	7.875	4	3/4-10 x 6 3/4	1.938	5.500**	47.8	63.8
N	150,000	1.500	7.000	10.000	6.625	6.250	0.563	8.125	8.500	4	7/8-9 x 8	2.438	6.000**	48.0	94.0
P	250,000	1.750	8.250	11.750	7.625	7.250	0.625	9.375	10.000	4	1-8 x 9 1/2	2.938	7.000**	69.5	133.0
W	375,000	2.000	10.437	15.000	9.375	9.000	0.500	11.375	12.750	4	1 1/8-7 x 11 1/2	4.000	8.500**	164.0	262.0
S	625,000	3.125	12.125	17.750	12.500	12.000	0.750	15.750	15.000	5	1 1/4-7 x 15	5.500	10.000**	133.0	350.0

\* Maximum bore without keyway.

\*\* Maximum bore with shallow keyway.

\*\*\* QD<sup>®</sup> is a trademark of Emerson Electric

# Bushing Bore and Keyseat Information

Taper-Lock® and QD® Bushings are available from stock with all popular bores within the bore range of each size bushing.

The Taper-Lock and QD Bushing Keyseat Dimension charts below list the bore range for each bushing and the appropriate keyseat dimensions.

Where standard keyseats are indicated, refer to the Standard Keyseat Dimensions chart. Where bores do not permit standard depth keyseats, a flat key of the proper dimensions is furnished with the bushing.

## Taper-Lock® Bushing Keyseat Dimensions

Bushing	Bores (in)	Keyseat
1008	0.500 - 0.875	Standard
	0.938 - 1.000	1/4 x 1/16
1108	0.500 - 1.000	Standard
	1.062 - 1.125	1/4 x 1/16
1210	0.500 - 1.250	Standard
1610	0.500 - 1.500	Standard
	1.563 - 1.688	3/8 x 1/8
1615	0.500 - 1.500	Standard
	1.563 - 1.688	3/8 x 1/8
2012	0.500 - 1.875	Standard
	1.938 - 2.125	1/2 x 3/16
2517	0.500 - 2.250	Standard
	2.313 - 2.688	5/8 x 3/16
3020	0.875 - 2.750	Standard
	2.813 - 3.000	3/4 x 1/8
	3.125 - 3.250	3/4 x 1/4
3525	1.188 - 3.250	Standard
	3.313	7/8 x 1/8
	3.375 - 3.750	7/8 x 3/16
3535	3.813 - 3.938	1 x 1/4
	1.188 - 3.250	Standard
	3.313	7/8 x 1/8
3535	3.375 - 3.500	7/8 x 3/16
	3.625	7/8 x 1/4
	3.688 - 3.750	7/8 x 3/16
	3.875 - 3.938	1 x 1/4
4030	1.438 - 3.625	Standard
	3.750	7/8 x 3/16
	3.813	1 x 1/2
	3.875 - 4.438	1 x 1/4
4040	1.438 - 3.625	Standard
	3.688 - 3.750	7/8 x 3/16
	3.875 - 4.438	1 x 1/4
4535	1.938 - 4.250	Standard
	4.375 - 4.500	1 x 1/4
	4.7500 - 4.938	1 1/4 x 1/4
4545	1.938 - 4.250	Standard
	4.375 - 4.500	1 x 1/4
	4.750 - 4.938	1 1/4 x 1/4
5040	2.438 - 4.500	Standard
	4.750 - 5.000	1 1/4 x 1/4
6050	4.438 - 6.000	Standard
7060	4.938 - 7.000	Standard

## QD® Bushing Keyseat Dimensions

Bushing	Bores (in)	Keyseat
E	0.875 - 2.875	Standard
	2.938 - 3.250	3/4 x 1/8
	3.375 - 3.500	7/8 x 1/16
F	1.000 - 3.250	Standard
	3.313 - 3.750	7/8 x 3/16
	3.875 - 3.938	1 x 1/8
J	4.000	None
	1.500 - 3.750	Standard
	3.813	1 x 1/2
M	3.875 - 3.938	1 x 3/8
	4.000 - 4.500	1 x 1/8
	2.000 - 4.750	Standard
N	4.875 - 5.500	1 1/4 x 1/4
	2.438 - 5.000	Standard
	5.125 - 5.500	1 1/4 x 1/4
P	5.625 - 6.000	1 1/2 x 1/8
	2.938 - 5.938	Standard
	6.000 - 6.500	1 1/2 x 1/4
W	6.750 - 7.000	1 3/4 x 1/8
	4.250 - 7.500	1 3/4 x 3/4
Made-to-order	8.000	2 x 1/4
S	6.000 - 8.500	Standard
	8.500 - 10.000	Made-to-order

## Standard Keyseat Dimensions

Shaft Diameter (in)	Keyseat (in)		Key (in)	
	Width	Depth	Width	Depth
0.313 - 0.438	3/32	3/64	3/32	3/32
0.500 - 0.563	1/8	1/16	1/8	1/8
0.625 - 0.875	3/16	3/32	3/16	3/16
0.938 - 1.250	1/4	1/8	1/4	1/4
1.313 - 1.375	5/16	5/32	5/16	5/16
1.438 - 1.750	3/8	3/16	3/8	3/8
1.813 - 2.250	1/2	1/4	1/2	1/2
2.313 - 2.750	5/8	5/16	5/8	5/8
2.813 - 3.250	3/4	3/8	3/4	3/4
3.313 - 3.750	7/8	7/16	7/8	7/8
3.813 - 4.500	1	1/2	1	1
4.563 - 5.500	1 1/4	5/8	1 1/4	1 1/4
5.563 - 6.500	1 1/2	3/4	1 1/2	1 1/2
6.563 - 7.500	1 3/4	3/4	1 3/4	1 1/2
7.563 - 9.000	2	3/4	2	1 1/2

\* Taper-Lock® is a trademark of Reliance Electric

\*\* QD® is a trademark of Emerson Electric



## Specifying English and Metric Keyways

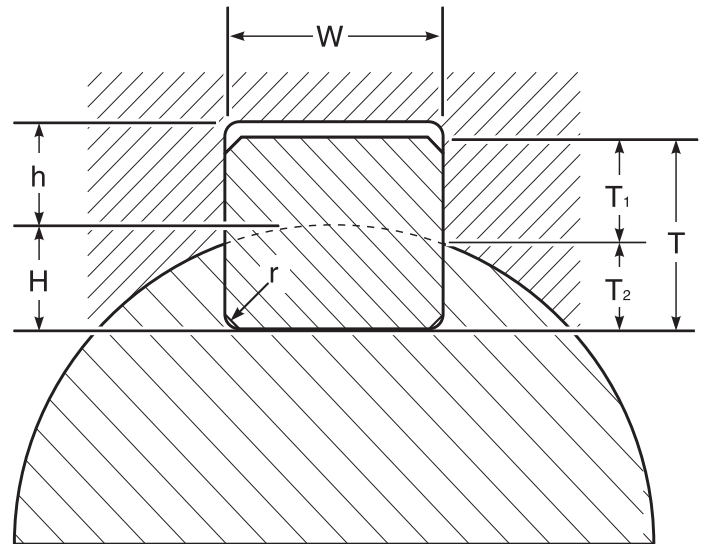
Dimensioning and specifying metric keys and keyways varies significantly from the English system. In the English system, it is the standard practice to dimension the keyway, while in the metric system it is common practice to specify the key size. In the English system, the keyway in the hub is dimensioned by the width and depth at the side, but in the metric system the keyway is dimensioned by the width and the depth measured from the radius of the shaft to the center of the keyway. One of the following methods should be used to specify keyways:

<b>English:</b>	<b>Metric:</b>
W x T <sub>1</sub> Keyway	W x T Key
W x T Key	W x h Keyway

Unless otherwise noted, the keyway in the shaft is assumed to be standard. Also, T<sub>1</sub> and T<sub>2</sub> are not necessarily equal.

The metric system does not refer to keyseat or keyway dimensions as does the English system. Instead, dimensions are given for the key itself which is rectangular in shape, not square, as in the English system. The correct terminology when ordering metric bored bushings with millimeter keyways will be either of the following:

1. Specify "standard Keyway"
2. Customer to specify keysize (keyseat to be standard size in shaft)

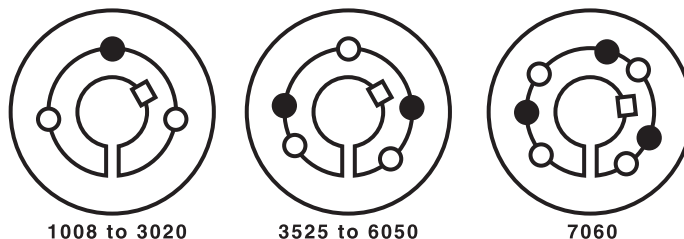


### Metric Bore and Key Dimensions for Taper-Lock®\*\* Bushings

Bushing	Bore (mm)	Keyway (Wxh) (mm)	Key Size (ref.) (mm)	
1008	14, 16	5 X 2.3	5 X 5	
	18, 19, 20, 22	6 X 2.8	6 X 6	
	24, 25*	8 X 3.3	8 X 7	
1108	14*, 16	5 X 2.3	5 X 5	
	18, 19, 20, 22	6 X 2.8	6 X 6	
	24, 25*	8 X 3.3	8 X 7	
1210	14, 16	5 X 2.3	5 X 5	
	18, 19, 20, 22*	6 X 2.8	6 X 6	
	24, 25, 28, 30	8 X 3.3	8 X 7	
	32*	10 X 3.3	10 X 8	
1610	14*, 16*	5 X 2.3	5 X 5	
	18*, 19, 20, 22	6 X 2.8	6 X 6	
	24, 25, 28, 30	8 X 3.3	8 X 7	
	32, 35, 38	10 X 3.3	10 X 8	
	40, 42*	12 X 3.3	12 X 8	
2012	14, 16	5 X 2.3	5 X 5	
	18, 19, 20, 22	6 X 2.8	6 X 6	
	24, 25, 28, 30	8 X 3.3	8 X 7	
	32, 35, 38	10 X 3.3	10 X 8	
	40, 42	12 X 3.3	12 X 8	
2517	14, 16	5 X 2.3	5 X 5	
	18, 19*, 20, 22	6 X 2.8	6 X 6	
	24, 25, 28, 30	8 X 3.3	8 X 7	
	32, 35, 38	10 X 3.3	10 X 8	
	40, 42	12 X 3.3	12 X 8	
	45, 48, 50	14 X 3.8	14 X 9	
	55	16 X 4.3	16 X 10	
	60, 65*	18 X 4.4	18 X 11	
	3020	24, 25, 28, 30*	8 X 3.3	8 X 7
		32*, 35*, 38*	10 X 3.3	10 X 8
40, 42*		12 X 3.3	12 X 8	
45, 48, 50		14 X 3.8	14 X 9	
55		16 X 4.3	16 X 10	
60, 65		18 X 4.4	18 X 11	
70*, 75*		20 X 4.9	20 X 12	
80*		22 X 5.4	22 X 14	

\*\* Taper-Lock® is a trademark of Reliance Electric

\* Non-stock, made to order bushing



## To Install TAPER-LOCK Type Bushings

- Clean the shaft, bushing bore, tapered bushing barrel and the sprocket hub bore of all oil, paint and dirt (**Note: Lubricants are not to be applied to bushings or sprockets**). Remove any burrs with a file or emery cloth.
- Insert bushing into sprocket hub matching hole patterns, not threaded holes. *Tightening holes* (“O” in diagram above) will be threaded on the sprocket hub side only. *Removal holes* (“●” in diagram above) will be threaded on the bushing side only. Thread screws into the installation or “O” holes.
- With the key in the shaft keyway, position the assembly onto the shaft at the desired location. Allow for small axial sprocket movement on bushing during tightening. (**Note: When mounting sprockets on vertical shafts, precautions must be taken to prevent the sprocket/bushing from falling during the tightening**).
- Alternately torque screws to the recommended torque level specified in the table below. **Note: Using worn hex key wrenches may damage screw heads preventing proper tightening torque and removal.**
- To increase and ensure bushing gripping force, firmly tap the bushing face using a drift or punch (**Do not hit bushing face directly with hammer**), then re-torque screws to the recommended torque level.

**Note: Do not continue tightening screws further after target torque has been reached as bushing over insertion and hub fracture may occur.**

## To Remove TAPER-LOCK Type Bushings

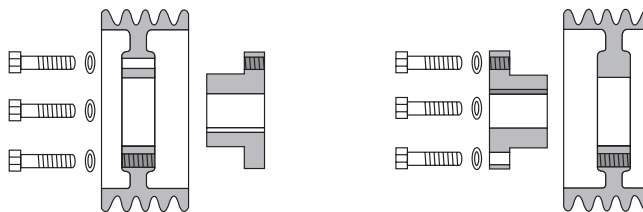
- Release belt tension and lift belt off of sprockets (**Note: Do not pry or roll belts off**).
- Loosen and remove screws securing sprockets to bushings.
- Insert screws into removal holes (“●” in diagram above).
- Alternately tighten screw or screws in small but equal increments until sprockets disengage from bushings.
- Remove sprockets and bushings from shafts as necessary.

## Sprocket Installation

Bushings Size	Mounting Hardware			Wrench Tools		Wrench Torque	
	Qty.	Size	Type	Type	Size (in.)	lb-ft	lb-in
1008	2	1/4-20 x 1/2	Set Screws	Hex Key	1/8	4.6	55
1108	2	1/4-20 x 1/2	Set Screws	Hex Key	1/8	4.6	55
1210	2	3/8-16 x 5/8	Set Screws	Hex Key	3/16	14.6	175
1610	2	3/8-16 x 5/8	Set Screws	Hex Key	3/16	14.6	175
1615	2	3/8-16 x 5/8	Set Screws	Hex Key	3/16	14.6	175
2012	2	7/16-14 x 7/8	Set Screws	Hex Key	7/32	23.3	280
2517	2	1/2-13 x 1	Set Screws	Hex Key	1/4	35.8	430
3020	2	5/8-11 x 1 1/4	Set Screws	Hex Key	5/16	66.7	800
3525	3	1/2-13 x 1 1/2	Socket Head	Hex Bit	3/8	83.3	1000
3535	3	1/2-13 x 1 1/2	Socket Head	Hex Bit	3/8	83.3	1000
4030	3	5/8-11 x 1 3/4	Socket Head	Hex Bit	1/2	141.7	1700
4040	3	5/8-11 x 1 3/4	Socket Head	Hex Bit	1/2	141.7	1700
4535	3	3/4-10 x 2	Socket Head	Hex Bit	5/8	204.2	2450
4545	3	3/4-10 x 2	Socket Head	Hex Bit	5/8	204.2	2450
5040	3	7/8-9 x 2 1/4	Socket Head	Hex Bit	3/4	258.3	3100
6050	3	1 1/4-7 x 3 1/2	Hex Head	Hex Socket	1 7/8	651.7	7820
7060	4	1 1/4-7 x 3 1/2	Hex Head	Hex Socket	1 7/8	651.7	7820

Caution: Excessive bolt torque can cause sprocket and/or bushing breakage.

Note: To insure proper bushing/sprocket performance, full bushing contact on the shaft is recommended.



**Conventional Mounting**

**Reverse Mounting**

## To Install QD Type Bushings

1. Clean the shaft, bushing bore, tapered bushing barrel and the sprocket hub bore of all oil, paint and dirt  
*(Note: Lubricants are not to be applied to bushings or sprockets).* Remove any burrs with a file or emery cloth.
2. Determine the type of mounting that will be used:
3. Conventional Mounting:
  - A. Insert key into the shaft keyway  
*(Note: If key is furnished with bushing, it is special and must be used).*
  - B. Insert a screw driver blade (or similar) into the bushing flange saw cut to enlarge bore slightly  
*(Caution: Excessive enlargement can split bushing).*
  - C. Slide bushing onto shaft with the flange side towards the equipment. Position bushing and tighten set screw to prevent sliding on shaft.
  - D. Place sprocket onto bushing and insert cap screws. Align drilled holes in sprocket hub with tapped holes in bushing flange.  
*(Note: Install M thru S bushings so that the two tapped removal holes in sprocket hubs are located far away from bushing saw cuts).* Finger-tighten the screws.
4. Reverse Mounting:
  - A. Insert key into the shaft keyway  
*(Note: If key is furnished with bushing, it is special and must be used).*
  - B. Place sprocket onto shaft without bushing.
  - C. Insert a screw driver blade (or similar) into the bushing flange saw cut to enlarge bore slightly  
*(Caution: Excessive enlargement can split bushing).*
  - D. Slide bushing onto shaft with flange facing outward, away from equipment. Position bushing and tighten the set screw enough to prevent sliding on shaft.
  - E. Place sprocket onto the bushing and insert cap screws. Align drilled holes in bushing flange with tapped holes in sprocket hub  
*(Note: Install M thru S bushings so that the two tapped removal holes in sprocket hubs are located far away from bushing saw cuts).* Finger-tighten the screws.
5. When positioned to the desired location, secure the first sprocket/bushing assembly to the shaft by tightening the bushing cap screws. Allow for small axial sprocket movement on bushing during tightening. Using a torque wrench, tighten the cap screws evenly in an alternating pattern until the recommended torque level in the following table is reached.  
*(Note: When mounting sprockets on vertical shafts, precautions must be taken to prevent the sprocket/bushing from falling during the tightening).*

**Note:** Do not continue tightening cap screws further after target torque has been reached as bushing over insertion and hub fracture may occur. The gap between the bushing flange and sprocket hub is intentional and necessary.

## To Remove QD Type Bushings

1. Release belt tension and lift belts off of sprockets  
*(Note: Do not pry or roll belts off).*
2. Loosen and remove cap screws securing sprockets to bushings. If applicable, loosen keyway set screws.
3. Insert cap screws into the tapped removal holes adjacent the drilled holes.
4. Alternately tighten cap screws in small but equal increments until sprockets disengage from bushings.  
*(Note: Uneven or excessive pressure on cap screws can break bushing flanges making removal extremely difficult)*
5. Remove sprockets and bushings from shafts as necessary.

### Sprocket Installation

Bushing Size	Mounting Hardware			Wrench Tools		Wrench Torque	
	Qty.	Size (English)	Type	Type	Size (in.)	lb-ft	lb-in
QT	2	1/4-20 x 1	Hex Head	Hex Socket	7/16	9.0	108
JA	3	10-24 x 1	Socket Head	Hex Key	5/32	5.0	60
SH	3	1/4-20 x 1 3/8	Hex Head	Hex Socket	7/16	9.0	108
SDS	3	1/4-20 x 1 3/8	Hex Head	Hex Socket	7/16	9.0	108
SD	3	1/4-20 x 1 7/8	Hex Head	Hex Socket	7/16	9.0	108
SK	3	5/16-18 x 2	Hex Head	Hex Socket	1/2	15.0	180
SF	3	3/8-16 x 2	Hex Head	Hex Socket	9/16	30.0	360
E	3	1/2-13 x 2 3/4	Hex Head	Hex Socket	3/4	60.0	720
F	3	9/16-12 x 3 5/8	Hex Head	Hex Socket	13/16	110.0	1320
J	3	5/8-11 x 4 1/2	Hex Head	Hex Socket	15/16	135.0	1620
M	4	3/4-10 x 6 3/4	Hex Head	Hex Socket	1 1/8	225.0	2700
N	4	7/8-9 x 8	Hex Head	Hex Socket	1 5/16	300.0	3600
P	4	1-8 x 9 1/2	Hex Head	Hex Socket	1 1/2	450.0	5400
W	4	1 1/8-7 x 11 1/2	Hex Head	Hex Socket	1 11/16	600.0	7200
S	5	1 1/4-7 x 15 1/2	Hex Head	Hex Socket	1 7/8	750.0	9000

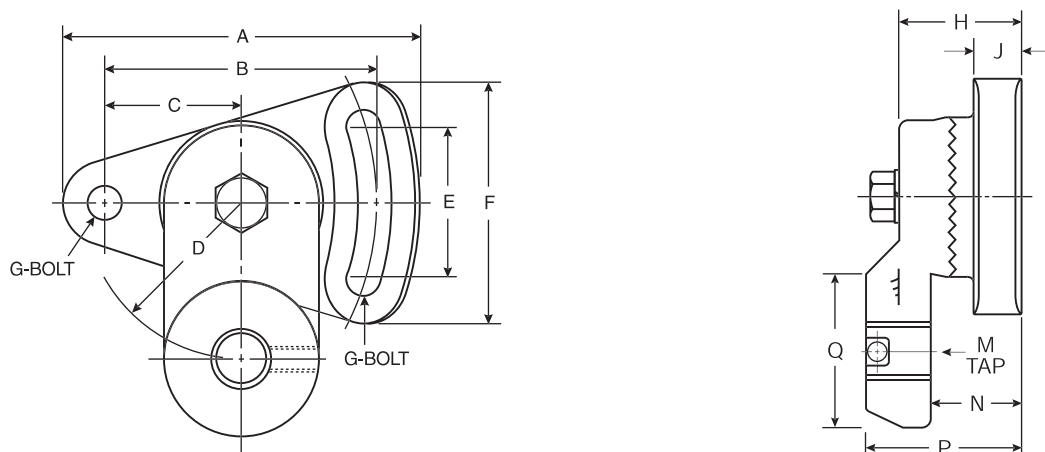
\* QD® is a trademark of Emerson Electric

Caution: Excessive bolt torque can cause sprocket and/or bushing breakage.

Note: To insure proper bushing/sprocket performance, full bushing contact on the shaft is recommended.



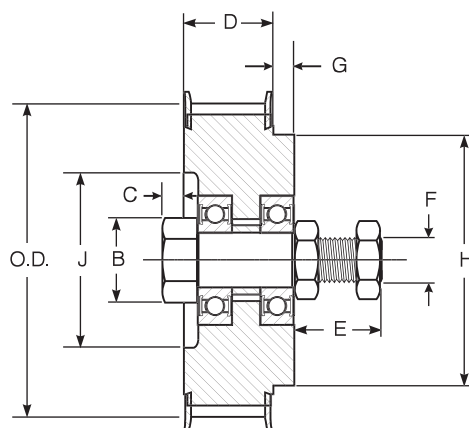
## (Double Adjustable)



### Specifications

Product No.	Use With	Part No.	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)	J (in)	M (Threads)	N (in)	P (in)	Q (in)	Weight (lb)
7720-1005	1610-IDL-BUSH	5-IDL-BRAK	4.63	3.50	1.75	2.00	2.06	3.06	0.38	1.40	0.63	5/8-18	0.90	1.88	1.94	2.80
7720-1010	20-SPK2-IDL 30-SPK2-IDL 2012-IDL-BUSH 2517-IDL-BUSH	10-IDL-BRAK	4.63	3.50	1.75	2.00	2.06	3.06	0.38	1.50	0.63	3/4-16	1.00	1.88	1.75	3.40
7720-1020	40-SPK2-IDL 55-SPK2-IDL	20-IDL-BRAK	6.94	5.25	2.63	5.00	3.00	4.56	0.63	2.25	1.00	1-14	1.50	2.94	2.75	11.20

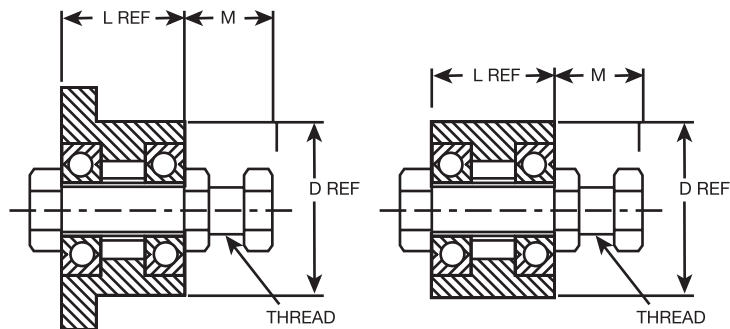
## PowerGrip® GT®2 Idler Sprockets



### PowerGrip® GT®2 Idler Dimensions

Product No.	Use With	Part No.	Size Designation	Belt Width (mm)	No. of Teeth	O.D. (in)	B Ref. (in)	C (in)	D (in)	E Ref. (in)	F (Threads)	G Ref. (in)	H (in)	J (in)	Weight (lb)
7720-1740	8mm Pitch	20-SPK2-IDL	P32-8MGT-20	20	32	3.154	1.25	0.50	1.24	1.56	3/4-16	0.56	2.75	-	1.10
7720-1750	PowerGrip GT3	30-SPK2-IDL	P36-8MGT-30	30	36	3.555	1.91	0.75	1.86	1.63	3/4-16	-	-	-	2.00
7720-1850	14mm Pitch	40-SPK2-IDL	P30-14MGT-40	40	30	5.153	2.55	1.00	2.06	2.25	1-14	0.25	4.38	-	12.00
7720-1860	PowerGrip GT3	55-SPK2-IDL	P34-14MGT-55	55	34	5.855	3.38	0.56	3.33	2.25	1-14	1.00	4.88	4.34	15.60

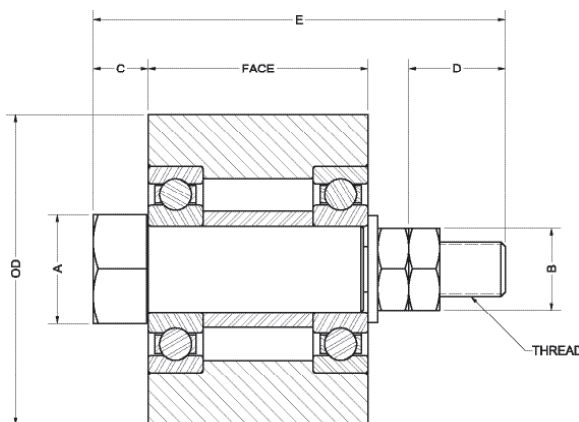
## Idler Bushings



### Idler Bushings (Integral Shaft Included)

Product No.	Part No.	Use with Bracket	D (in)	L (in)	M (in)	Threads	Weight (lb)
7720-2610	1610-IDL-BUSH	5-IDL-BRAK	2.25	1.00	1.38	5/8-18	1.30
7720-2012	2012-IDL-BUSH	10-IDL-BRAK	2.75	1.25	1.56	3/4-16	2.30
7720-2517	2517-IDL-BUSH	10-IDL-BRAK	3.38	1.75	1.56	3/4-16	3.90
7720-1120	20-IDL-BUSH (SK)	10-IDL-BRAK	2.81	1.94	1.44	3/4-16	4.10
7720-1130	30-IDL-BUSH (SF)	20-IDL-BRAK	3.13	2.08	2.13	1-14	6.40
7720-1140	40-IDL-BUSH (E)	20-IDL-BRAK	3.83	2.75	2.19	1-14	8.60

## Flat Idlers



### Flat Idler Dimensions

Part No.	Product No.	Use with Synchronous Belt		Outside Dia. (In.)	Face Width (In.)	A	B	C	D	E	Threads	Bearing Number	Wt. Ea. (Lbs.)
		Pitch	Width										
4.25X1.25-IDL-FLAT	7723-4125	8mm, L, H	Up to 21mm (0.85")	4.25	1.25	1.13	1.13	0.64	1.30	3.75	3/4-16	6304	5.20
4.25X2.00-IDL-FLAT	7723-4200	8mm, L, H	Up to 38mm (1.5")	4.25	2.00	1.50	1.13	0.63	1.32	4.50	3/4-16	6306	7.50
4.25X3.00-IDL-FLAT	7723-4300	8mm, L, H	Up to 62mm (2.4")	4.25	3.00	1.50	1.13	0.75	1.32	5.63	3/4-16	6306	10.60
4.25X4.00-IDL-FLAT	7723-4400	8mm, L, H	Up to 85mm (3.3")	4.25	4.00	1.50	1.13	0.75	1.32	6.63	3/4-16	6306	13.60
6.50X1.75-IDL-FLAT	7723-6175	14mm	Up to 20mm	6.50	1.75	2.00	1.50	1.04	1.96	5.69	1-14	6308	17.10
6.50X2.75-IDL-FLAT	7723-6275	14mm	Up to 55mm	6.50	2.75	2.00	1.50	0.13	2.10	5.69	1-14	6308	23.00
6.50X4.25-IDL-FLAT	7723-6425	14mm	Up to 90mm	6.50	4.25	2.38	1.50	0.13	1.98	7.06	1-14	6308	33.00
6.50X5.75-IDL-FLAT	7723-6575	14mm	Up to 125mm	6.50	5.75	2.38	1.50	0.99	1.98	9.31	1-14	6308	45.00
6.50X7.50-IDL-FLAT	7723-6750	14mm	Up to 170mm	6.50	7.50	2.38	1.50	1.00	1.98	11.19	1-14	6308	57.00

# Sprocket Specification Tables

## 5mm Pitch PowerGrip® GT®2 Sprocket Diameters

No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)	
	Diameters			Diameters			Diameters			Diameters			Diameters	
	P.D.	O.D.		P.D.	O.D.		P.D.	O.D.		P.D.	O.D.		P.D.	O.D.
18	28.65 1.128	27.51 1.083	47	74.80 2.945	73.66 2.900	76	120.96 4.762	119.82 4.717	105	167.11 6.579	165.97 6.534	134	213.27 8.396	212.13 8.351
19	30.24 1.191	29.10 1.146	48	76.39 3.008	75.25 2.963	77	122.55 4.825	121.41 4.780	106	168.70 6.642	167.56 6.597	135	214.86 8.459	213.72 8.414
20	31.83 1.253	30.69 1.208	49	77.99 3.070	76.85 3.025	78	124.14 4.887	123.00 4.842	107	170.30 6.705	169.16 6.660	136	216.45 8.522	215.31 8.477
21	33.42 1.316	32.28 1.271	50	79.58 3.133	78.44 3.088	79	125.73 4.950	124.59 4.905	108	171.89 6.767	170.75 6.722	137	218.04 8.584	216.90 8.539
22	35.01 1.379	33.87 1.334	51	81.17 3.196	80.03 3.151	80	127.32 5.013	126.18 4.968	109	173.48 6.830	172.34 6.785	138	219.63 8.647	218.49 8.602
23	36.61 1.441	35.47 1.396	52	82.76 3.258	81.62 3.213	81	128.92 5.075	127.78 5.030	110	175.07 6.893	173.93 6.848	139	221.23 8.710	220.09 8.665
24	38.20 1.504	37.06 1.459	53	84.35 3.321	83.21 3.276	82	130.51 5.138	129.37 5.093	111	176.66 6.955	175.52 6.910	140	222.82 8.772	221.68 8.727
25	39.79 1.566	38.65 1.521	54	85.94 3.384	84.80 3.339	83	132.10 5.201	130.96 5.156	112	178.25 7.018	177.11 6.973	141	224.41 8.835	223.27 8.790
26	41.38 1.629	40.24 1.584	55	87.54 3.446	86.40 3.401	84	133.69 5.263	132.55 5.218	113	179.85 7.081	178.71 7.036	142	226.00 8.898	224.86 8.853
27	42.97 1.692	41.83 1.647	56	89.13 3.509	87.99 3.464	85	135.28 5.326	134.14 5.281	114	181.44 7.143	180.30 7.098	143	227.59 8.960	226.45 8.915
28	44.56 1.754	43.42 1.709	57	90.72 3.572	89.58 3.527	86	136.87 5.389	135.73 5.344	115	183.03 7.206	181.89 7.161	144	229.18 9.023	228.04 8.978
29	46.15 1.817	45.01 1.772	58	92.31 3.634	91.17 3.589	87	138.46 5.451	137.32 5.406	116	184.62 7.268	183.48 7.223	145	230.77 9.086	229.63 9.041
30	47.75 1.880	46.61 1.835	59	93.90 3.697	92.76 3.652	88	140.06 5.514	138.92 5.469	117	186.21 7.331	185.07 7.286	146	232.37 9.148	231.23 9.103
31	49.34 1.942	48.20 1.897	60	95.49 3.760	94.35 3.715	89	141.65 5.577	140.51 5.532	118	187.80 7.394	186.66 7.349	147	233.96 9.211	232.82 9.166
32	50.93 2.005	49.79 1.960	61	97.08 3.822	95.94 3.777	90	143.24 5.639	142.10 5.594	119	189.39 7.456	188.25 7.411	148	235.55 9.274	234.41 9.229
33	52.52 2.068	51.38 2.023	62	98.68 3.885	97.54 3.840	91	144.83 5.702	143.69 5.657	120	190.99 7.519	189.85 7.474	149	237.14 9.336	236.00 9.291
34	54.11 2.130	52.97 2.085	63	100.27 3.948	99.13 3.903	92	146.42 5.765	145.28 5.720	121	192.58 7.582	191.44 7.537	150	238.73 9.399	237.59 9.354
35	55.70 2.193	54.56 2.148	64	101.86 4.010	100.72 3.965	93	148.01 5.827	146.87 5.782	122	194.17 7.644	193.03 7.599	151	240.32 9.462	239.18 9.417
36	57.30 2.256	56.16 2.211	65	103.45 4.073	102.31 4.028	94	149.61 5.890	148.47 5.845	123	195.76 7.707	194.62 7.662	152	241.92 9.524	240.78 9.479
37	58.89 2.318	57.75 2.273	66	105.04 4.136	103.90 4.091	95	151.20 5.953	150.06 5.908	124	197.35 7.770	196.21 7.725	153	243.51 9.587	242.37 9.542
38	60.48 2.381	59.34 2.336	67	106.63 4.198	105.49 4.153	96	152.79 6.015	151.65 5.970	125	198.94 7.832	197.80 7.787	154	245.10 9.650	243.96 9.605
39	62.07 2.444	60.93 2.399	68	108.23 4.261	107.09 4.216	97	154.38 6.078	153.24 6.033	126	200.54 7.895	199.40 7.850	155	246.69 9.712	245.55 9.667
40	63.66 2.506	62.52 2.461	69	109.82 4.324	108.68 4.279	98	155.97 6.141	154.83 6.096	127	202.13 7.958	200.99 7.913	156	248.28 9.775	247.14 9.730
41	65.25 2.569	64.11 2.524	70	111.41 4.386	110.27 4.341	99	157.56 6.203	156.42 6.158	128	203.72 8.020	202.58 7.975	157	249.87 9.838	248.73 9.793
42	66.85 2.632	65.71 2.587	71	113.00 4.449	111.86 4.404	100	159.15 6.266	158.01 6.221	129	205.31 8.083	204.17 8.038	158	251.46 9.906	250.32 9.855
43	68.44 2.694	67.30 2.649	72	114.59 4.511	113.45 4.466	101	160.75 6.329	159.61 6.284	130	206.90 8.146	205.76 8.101	159	253.06 9.963	251.92 9.918
44	70.03 2.757	68.89 2.712	73	116.18 4.574	115.04 4.529	102	162.34 6.391	161.20 6.346	131	208.49 8.208	207.35 8.163	160	254.65 10.026	253.51 9.981
45	71.62 2.820	70.48 2.775	74	117.77 4.637	116.63 4.592	103	163.93 6.454	162.79 6.409	132	210.08 8.271	208.94 8.226			
46	73.21 2.882	72.07 2.837	75	119.37 4.699	118.23 4.654	104	165.52 6.517	164.38 6.472	133	211.68 8.334	210.54 8.289			

See Page 153 for sprocket O.D. tolerances.



# Sprocket Specification Tables

## 8mm Pitch PowerGrip® GT®2 Sprocket Diameters

No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)		No. of Grooves	mm (in)	
	Diameters			Diameters			Diameters			Diameters			Diameters	
	P.D.	O.D.		P.D.	O.D.		P.D.	O.D.		P.D.	O.D.		P.D.	O.D.
22	56.02 2.206	54.65 2.152	57	145.15 5.715	143.78 5.660	92	234.28 9.223	232.90 9.169	127	323.41 12.733	322.03 12.678	162	412.53 16.241	411.16 16.187
23	58.57 2.306	57.20 2.252	58	147.70 5.815	146.32 5.761	93	236.82 9.324	235.45 9.270	128	325.95 12.833	324.58 12.779	163	415.08 16.342	413.70 16.288
24	61.12 2.406	59.74 2.352	59	150.24 5.915	148.87 5.861	94	239.37 9.424	238.00 9.370	129	328.50 12.933	327.12 12.879	164	417.62 16.442	416.25 16.388
25	63.66 2.506	62.29 2.452	60	152.79 6.015	151.42 5.961	95	241.92 9.524	240.54 9.470	130	331.04 13.033	329.67 12.979	165	420.17 16.542	418.80 16.488
26	66.21 2.607	64.84 2.553	61	155.34 6.116	153.96 6.062	96	244.46 9.624	243.09 9.570	131	333.59 13.133	332.22 13.079	166	422.72 16.642	421.34 16.588
27	68.75 2.707	67.38 2.653	62	157.88 6.216	156.51 6.162	97	247.01 9.725	245.64 9.671	132	336.14 13.234	334.76 13.180	167	425.26 16.743	423.89 16.689
28	71.30 2.807	69.93 2.753	63	160.43 6.316	159.06 6.262	98	249.55 9.825	248.18 9.771	133	338.68 13.334	337.31 13.280	168	427.81 16.843	426.44 16.789
29	73.85 2.907	72.48 2.853	64	162.97 6.416	161.60 6.362	99	252.10 9.925	250.73 9.871	134	341.23 13.434	339.86 13.380	169	430.35 16.943	428.98 16.889
30	76.39 3.008	75.02 2.954	65	165.52 6.517	164.15 6.463	100	254.65 10.025	253.28 9.971	135	343.77 13.534	342.40 13.480	170	432.90 17.043	431.53 16.989
31	78.94 3.108	77.57 3.054	66	168.07 6.617	166.70 6.563	101	257.19 10.126	255.82 10.072	136	346.32 13.635	344.95 13.581	171	435.45 17.144	434.08 17.090
32	81.49 3.208	80.12 3.154	67	170.61 6.717	169.24 6.663	102	259.74 10.226	258.37 10.172	137	348.87 13.735	347.50 13.681	172	437.99 17.244	436.62 17.190
33	84.03 3.308	82.66 3.254	68	173.16 6.817	171.79 6.763	103	262.29 10.326	260.92 10.272	138	351.41 13.835	350.04 13.781	173	440.54 17.344	439.17 17.290
34	86.58 3.409	85.21 3.355	69	175.71 6.918	174.34 6.864	104	264.83 10.427	263.46 10.372	139	353.96 13.935	352.59 13.881	174	443.09 17.444	441.72 17.390
35	89.13 3.509	87.76 3.455	70	178.25 7.018	176.88 6.964	105	267.38 10.527	266.01 10.473	140	356.51 14.036	355.14 13.982	175	445.63 17.544	444.26 17.491
36	91.67 3.609	90.30 3.555	71	180.80 7.118	179.43 7.064	106	269.93 10.628	268.56 10.573	141	359.05 14.136	357.68 14.082	176	448.18 17.645	446.81 17.591
37	94.22 3.709	92.85 3.655	72	183.35 7.218	181.97 7.164	107	272.47 10.728	271.10 10.673	142	361.60 14.236	360.23 14.182	177	450.73 17.745	449.36 17.691
38	96.77 3.810	95.39 3.756	73	185.89 7.319	184.52 7.265	108	275.02 10.828	273.65 10.771	143	364.15 14.336	362.77 14.282	178	453.27 17.845	451.90 17.791
39	99.31 3.910	97.94 3.856	74	188.44 7.419	187.07 7.365	109	277.57 10.928	276.19 10.874	144	366.69 14.437	365.32 14.383	179	455.82 17.946	454.45 17.892
40	101.86 4.010	100.49 3.956	75	190.99 7.519	189.61 7.465	110	280.11 11.028	278.74 10.974	145	369.24 14.537	367.87 14.483	180	458.37 18.046	456.99 17.992
41	104.41 4.110	103.03 4.056	76	193.53 7.619	192.16 7.565	111	282.66 11.128	281.29 11.074	146	371.79 14.637	370.41 14.583	181	460.91 18.146	459.54 18.092
42	106.95 4.211	105.58 4.157	77	196.08 7.720	194.71 7.666	112	285.21 11.229	283.83 11.175	147	374.33 14.737	372.96 14.683	182	463.46 18.246	462.09 18.192
43	109.50 4.311	108.13 4.257	78	198.63 7.820	197.25 7.766	113	287.75 11.329	286.38 11.275	148	376.88 14.838	375.51 14.784	183	466.01 18.347	464.63 18.293
44	112.05 4.411	110.67 4.357	79	201.17 7.920	199.81 7.866	114	290.30 11.429	288.93 11.375	149	379.43 14.938	378.05 14.884	184	468.55 18.447	467.18 18.393
45	114.59 4.511	113.22 4.457	80	203.72 8.020	202.35 7.966	115	292.85 11.529	291.47 11.475	150	381.97 15.038	380.60 14.984	185	471.10 18.547	469.73 18.493
46	117.14 4.612	115.77 4.558	81	206.26 8.121	2.4.89 8.067	116	295.39 11.630	294.02 11.576	151	384.52 15.138	353.15 15.084	186	473.65 18.647	472.27 18.593
47	119.68 4.712	118.31 4.658	82	208.81 8.221	207.44 8.167	117	297.94 11.730	296.57 11.676	152	387.06 15.239	385.70 15.185	187	476.19 18.748	474.82 18.694
48	122.23 4.812	120.86 4.758	83	211.36 8.321	209.99 8.267	118	300.48 11.830	299.11 11.776	153	389.61 15.339	388.24 15.285	188	478.74 18.848	477.37 18.794
49	124.78 4.912	123.41 4.858	84	213.90 8.421	212.53 8.367	119	303.03 11.930	301.66 11.876	154	392.16 15.439	390.79 15.385	189	481.28 18.948	479.91 18.894
50	127.32 5.013	125.95 4.959	85	216.45 8.522	215.08 8.468	120	305.58 12.031	304.21 11.977	155	394.70 15.510	393.33 15.486	190	483.83 19.048	482.46 18.994
51	129.87 5.113	128.50 5.059	86	219.00 8.622	217.63 8.568	121	308.12 12.131	306.75 12.077	156	397.25 15.640	395.88 15.586	191	486.38 19.149	485.01 19.095
52	132.42 5.213	131.05 5.159	87	221.54 8.722	220.17 8.668	122	310.67 12.231	309.30 12.177	157	399.80 15.740	398.43 15.686	192	488.92 19.249	487.55 19.195
53	134.96 5.314	133.59 5.259	88	224.09 8.822	222.72 8.768	123	313.22 12.331	311.85 12.277	158	402.34 15.840	400.97 15.786			
54	137.51 5.414	136.14 5.360	89	226.64 8.923	225.27 8.869	124	315.76 12.432	314.39 12.378	159	404.89 15.941	403.52 15.887			
55	140.06 5.514	138.68 5.460	90	229.18 9.023	227.81 8.969	125	318.31 12.532	316.94 12.478	160	407.44 16.041	406.07 15.987			
56	142.60 5.614	141.23 5.560	91	231.73 9.123	230.36 9.069	126	320.86 12.632	319.48 12.578	161	409.98 16.141	408.61 16.087			

See Page 153 for sprocket O.D. tolerances.









# ENGINEERING DATA

**NOTE:** This engineering section provides general engineering information for synchronous belts and sprockets (or pulleys) which are useful in general drive design work. Where we refer to sprockets (for PowerGrip® GT®2 belts), you can substitute pulleys for PowerGrip Timing Belts. If you need additional information, contact Gates Power Transmission Product Application.

## Section I

### Application Design Considerations

When designing synchronous drives, there are several special circumstances that may require additional consideration:

1. Gear Motors/ Speed Reducer Drives
2. Electric Motor Frame Dimensions
3. Minimum Sprocket Diameter Recommendations for Electric Motors
4. High-Driven Inertia
5. Air Moving Drives
6. Linear Motion Drives
7. High Performance Applications
8. Belt Drive Registration
9. Belt Drive Noise
10. Use of Flanged Sprockets
11. Fixed (Nonadjustable) Center Distance
12. Use of Idlers
13. Specifying Shaft Locations in Multipoint Drive Layouts
14. Minimum Belt Wrap and Tooth Engagement
15. Adverse Operating Environments

Each of these circumstances and special considerations are reviewed below.

#### 1. Gear Motors/ Speed Reducer Drives

When designing a belt drive system to transfer power from the output shaft of a speed reducer to the final driven shaft, the designer must make certain that the belt drive does not exert shaft loads greater than the speed reducing device is rated to carry. Failure to do so can result in premature shaft/ bearing failures whether the belt drive has been designed with the appropriate power capacity or not.

This concept is similar to the National Electric Motor Association (NEMA) establishing minimum acceptable sprocket diameters for each of their standardized motor frames. Abiding by these minimum recommended diameters, when designing a belt drive system, prevents the motor bearings from failing prematurely due to excessive shaft loads exerted by the belt drive.

Overhung load is generally defined as a force exerted by a belt or chain drive, that is perpendicular to a speed reducer shaft, and applied beyond its outermost bearing. Calculated overhung load values are intended to serve as an indication of how heavily loaded the shaft and outermost bearing of a speed reducer actually is.

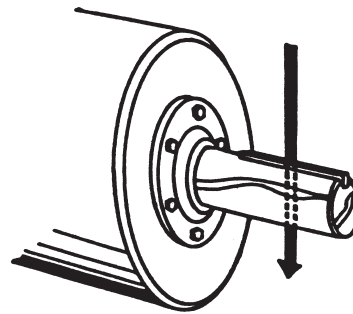


Figure 3 - Overhung Load

Overhung load calculations are generally assumed to apply to the slower output shaft of a speed reducer. It is important to note that these calculations apply to higher speed input shafts as well.

Most speed reducer manufacturers publish allowable overhung load values for every model in their product line. This value represents the maximum load that the shaft and bearings can support without negatively impacting the durability of the speed reducer. When the actual overhung load exceeds the published allowable value, premature shaft or bearing failure may occur. In extreme cases, catastrophic failures can occur.

A general formula used to calculate overhung load (OHL) is as follows:

$$\text{OHL} = \frac{126,000 \times \text{HP} \times K_{\text{LCF}} \times K_{\text{SF}} \times K_{\text{LLF}}}{\text{PD} \times \text{RPM}}$$

Where: HP = Actual horsepower being transmitted at the gear motor/reducer output shaft with no service factor applied

$K_{\text{LCF}}$  = Overhung load connection factor (1.3 for all synchronous belt drives)

$K_{\text{SF}}$  = Service factor for the speed reducer (available from the manufacturer)

$K_{\text{LLF}}$  = Load location factor for the speed reducer (available from the manufacturer)

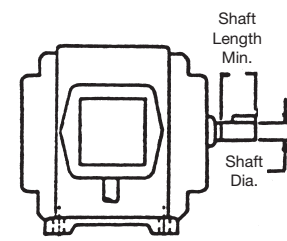
PD = Pitch diameter of the speed reducer output shaft sprocket

RPM = RPM of the speed reducer output shaft

Speed reducer manufacturers each publish their own specific formula and constants to calculate overhung load. They also publish specific overhung load ratings for each speed reducer product that they produce. It is very important to use the correct overhung load calculation procedure in conjunction with the manufacturer's accompanying overhung load rating.

If the calculated overhung load for a particular belt drive system does exceed the speed reducer manufacturer's maximum recommended value, consider altering the belt drive design. In order to reduce the calculated overhung load, consider:

- Increasing sprocket diameters
- Reducing belt width
- Mounting the sprocket closer to the speed reducer outboard bearing



Increasing the sprocket diameter not only reduces calculated overhung load, it also potentially reduces the required belt width. Reducing the belt width and mounting the sprocket as close as possible to the outermost bearing of the speed reducer both move the center of the belt load closer to the speed reducer. This also reduces the calculated overhung load. Alterations to the belt drive design should be made until the calculated overhung load is within the speed reducer manufacturer's recommendations.

## 2. Electric Motor Frame Dimensions

Motor dimensions can be important considerations depending on the application and its requirements. If motor shaft length, motor shaft diameter, or clearance issues are a concern, refer to the motor dimension table on this page. The table lists common general purpose electric motors by frame size.

### Motor Frame Dimensions

Frame Size	Shaft Dia. (in)	Shaft Length Min. (in)	Key (in)
48 56	1/2 5/8	— —	3/64 Flat 3/16 x 3/16 x 1-3/8
143T 145T	7/8 7/8	2 2	3/16 x 3/16 x 1-3/8 3/16 x 3/16 x 1-3/8
182 182T 184 184T	7/8 1-1/8 7/8 1-1/8	2 2-1/2 2 2-1/2	3/16 x 3/16 x 1-3/8 1/4 x 1/4 x 1-3/4 3/16 x 3/16 x 1-3/8 1/4 x 1/4 x 1-3/4
213 213T 215 215T	1-1/8 1-3/8 1-1/8 1-3/8	2-3/4 3-1/8 2-3/4 3-1/8	1/4 x 1/4 x 2 5/16 x 5/16 x 2-3/8 1/4 x 1/4 x 2 5/16 x 5/16 x 2-3/8
254U 254T 256U 256T	1-3/8 1-5/8 1-3/8 1-5/8	3-1/2 3-3/4 3-1/2 3-3/4	5/16 x 5/16 x 2-3/4 3/8 x 3/8 x 2-7/8 5/16 x 5/16 x 3-3/4 3/8 x 3/8 x 2-7/8
284U 284T 284TS 286U 286T 286TS	1-5/8 1-7/8 1-5/8 1-5/8 1-7/8 1-5/8	4-5/8 4-3/8 3 4-5/8 4-3/8 3	3/8 x 3/8 x 3-3/4 1/2 x 1/2 x 3-1/4 3/8 x 3/8 x 1-7/8 3/8 x 3/8 x 3-3/4 1/2 x 1/2 x 3-1/4 3/8 x 3/8 x 1-7/8
324U 324T 324TS 326U 326T 326TS	1-7/8 2-1/8 1-7/8 1-7/8 2-1/8 1-7/8	5-3/8 5 3-1/2 5-3/8 5 3-1/2	1/2 x 1/2 x 4-1/4 1/2 x 1/2 x 3-7/8 1/2 x 1/2 x 2 1/2 x 1/2 x 4-1/4 1/2 x 1/2 x 3-7/8 1/2 x 1/2 x 2
364U 364US 364T 364TS 365U 365US 365T 365TS	2-1/8 1-7/8 2-3/8 1-7/8 2-1/8 1-7/8 2-3/8 1-7/8	6-1/8 3-1/2 5-5/8 3-1/2 6-1/8 3-1/2 5-5/8 3-1/2	1/2 x 1/2 x 5 1/2 x 1/2 x 2 5/8 x 5/8 x 4-1/4 1/2 x 1/2 x 2 1/2 x 1/2 x 5 1/2 x 1/2 x 2 5/8 x 5/8 x 4-1/4 1/2 x 1/2 x 2
404U 404US 404T 404TS 405U 405US 405T 405TS	2-3/8 2-1/8 2-7/8 2-1/8 2-3/8 2-1/8 2-7/8 2-1/8	6-7/8 4 7 4 6-7/8 4 7 4	5/8 x 5/8 x 5-1/2 1/2 x 4 x 2-3/4 3/4 x 3/4 x 5-5/8 1/2 x 1/2 x 2-3/4 5/8 x 5/8 x 5-1/2 1/2 x 1/2 x 2-3/4 3/4 x 3/4 x 5-5/8 1/2 x 1/2 x 2-3/4
444U 444US 444T 444TS 445U 445US 445T 445TS 447T 447TS 449T 449TS	2-7/8 2-1/8 3-3/8 2-3/8 2-7/8 2-1/8 3-3/8 2-3/8 3-3/8 3-3/8 3-3/8 2-3/8	8-3/8 4 8-1/4 4-1/2 8-3/8 4 8-1/4 4-1/2 8-1/4 8-1/4 8-1/4 4-1/2	3/4 x 3/4 x 7 1/2 x 1/2 x 2-3/4 7/8 x 7/8 x 6-7/8 5/8 x 5/8 x 3 3/4 x 3/4 x 7 1/2 x 1/2 x 2-3/4 7/8 x 7/8 x 6-7/8 5/8 x 5/8 x 3 7/8 x 7/8 x 6-7/8 5/8 x 5/8 x 3 7/8 x 7/8 x 6-7/8 5/8 x 5/8 x 3

### 3. Minimum Sprocket Diameter Recommendations for Electric Motors

#### Minimum Recommended Sprocket / Sheave Diameters

NEMA (The National Electric Manufacturers Association) publishes recommendations for the minimum diameter of sprockets and sheaves to be used on General Purpose Electric Motors. The purpose of these recommendations is to prevent the use of excessively small sprockets or sheaves. This can result in motor shaft or bearing damage since belt pull increases as the diameter is reduced.

Table data has been compiled from NEMA Standard MG-1-14-42; 11/78, MG-1-14-43; 1/68, and a composite of electric motor manufacturers data. Values are generally conservative, and specific motors may permit the use of a smaller sprocket or sheave. Consult the motor manufacturer.

#### Motor Frames and Minimum Diameters for 60 Cycle Electric Motors

Motor Frame Code	Shaft Dia. (in)	Horsepower at Synchronous Speed (rpm)				Synchronous Belts
		3600 (3450)	1800 (1750)	1200 (1160)	900 (870)	Min. Pitch Dia. (in)
143T	0.875	1-1/2	1	3/4	1/2	2.0
145T	0.875	2-3	1-1/2-2	1	3/4	2.2
182T	1.125	3	3	1-1/2	1	2.2
182T	1.125	5	—	—	—	2.4
184T	1.125	—	—	2	1-1/2	2.2
184T	1.125	5	—	—	—	2.2
184T	1.125	7-1/2	5	—	—	2.7
213T	1.375	7-1/2-10	7-1/2	3	2	2.7
215T	1.375	10	—	5	3	2.7
215T	1.375	15	10	—	—	3.4
254T	1.625	15	—	7-1/2	5	3.4
254T	1.625	20	15	—	—	4.0
256T	1.625	20-25	—	10	7-1/2	4.0
256T	1.625	—	20	—	—	4.0
284T	1.875	—	—	15	10	4.0
284T	1.875	—	25	—	—	4.0
286T	1.875	—	30	20	15	4.7
324T	2.125	—	40	25	20	5.4
326T	2.125	—	50	30	25	6.1
364T	2.375	—	—	40	30	6.1
364T	2.375	—	60	—	—	6.7
365T	2.375	—	—	50	40	7.4
365T	2.375	—	75	—	—	7.7
404T	2.875	—	—	60	—	7.2
404T	2.875	—	—	—	50	7.6
404T	2.875	—	100	—	—	7.7
405T	2.875	—	—	75	60	9.0
405T	2.875	—	100	—	—	7.7
405T	2.875	—	125	—	—	9.5
444T	3.375	—	—	100	—	9.0
444T	3.375	—	—	—	75	8.6
444T	3.375	—	125	—	—	8.6
444T	3.375	—	150	—	—	9.5
445T	3.375	—	—	125	—	10.8
445T	3.375	—	—	—	100	10.8
445T	3.375	—	150	—	—	9.5
445T	3.375	—	200	—	—	11.9

### 4. High-Driven Inertia

Many drives, such as piston compressors, punch presses and crushers, depend on the drive pulley acting as a flywheel. This flywheel effect, or WR<sup>2</sup> is used to help moderate or smooth out fluctuations in driven load and speed. Failure to compensate for this during a redesign can result in premature damage to the prime mover or early belt failures. This can be a consideration when replacing older belt drives with new, higher capacity belts.

When replacing large pulleys or sheaves with sprockets, be careful not to remove a designed-in flywheel effect. Ask questions of the user to make sure there is not a concern for a high WR<sup>2</sup>. If there is a concern, you may have to use a wider sprocket, a larger diameter, or a special made-to-order sprocket designed with added weight and WR<sup>2</sup>.

Drives which have a high drive inertia and are subjected to high acceleration or emergency stop conditions require additional design expertise. Contact Gates Power Transmission Product Application for further engineering assistance.

### 5. Air Moving Drives

#### HVAC Equipment Inspection

Many air handling drives have structures that are not particularly rigid, which can create belt tension and drive alignment problems resulting in unusual and premature belt wear. Synchronous belts are sensitive to fluctuations in center distance that can be caused by inadequate bracketry. Under start up conditions, an AC motor can be required to provide 150% to 200% of its rated capacity. Synchronous belts cannot slip, and must transmit the higher start up torque. Under these conditions, the drive center distance may collapse if the structure is not sufficiently rigid.

With the drive shut off and safely locked out, a simple method to use when inspecting potential drive conversions is to grab the two belt spans and push them together while observing the motor. If any significant relative change in center distance or motor position is noticed, the drive's structural strength is most likely insufficient for a simple conversion. The structure would need to be reinforced to obtain optimum performance from a synchronous belt drive. The best conversion candidates have motors that are mounted solidly on support bracketry that is part of the fan's structural system. When possible, select synchronous drives with diameters similar to existing V-belt sheave diameters. This will maintain similar belt pulls and loads on the shafts and structure.

#### Air Handling Unit Start-Up Characteristics

##### Full Load Start Up

Start up loads can be a concern when evaluating potential drives for conversion to synchronous belts. Synchronous belts will transmit all of the start up torque, where V-belts may slip if the load is excessive. Due to the inertia of the fan, start up loads can potentially be 150% to 200% of the normal operating load. It is important that the start up load be considered by selecting appropriate service factors when designing a belt drive system.

## Controlled Start Up

An air handling drive with soft start or variable frequency controller (AC Inverter) is ideal for conversion to synchronous belts. The fan will be ramped up to speed slowly, with a corresponding increase in load as the speed increases. Structural flexing is typically not a concern when designing synchronous belt drives on systems using soft starts or variable frequency controllers.

## Fan Speed

The volume of air being transmitted and the required horsepower are both sensitive to changes in the driveN fan speed. If designing a synchronous belt drive for energy savings, it is important that the synchronous belt drive be designed to operate at the proper driveN fan speed. All conversions from existing V-belt drives should have the synchronous belt drive speed ratio based on a measured driveN shaft RPM, and not calculated from the theoretical V-belt speed ratio. This measurement can be made by either using a mechanical contact tachometer or a strobe tachometer.

The horsepower requirement for fans varies with the cube of the fan speed. A small change in the fan speed makes a much larger difference in the actual horsepower and energy required.

$$HP^1/HP^2 = (RPM^1/RPM^2)^3$$

Where: HP<sup>1</sup> = Initial Horsepower  
HP<sup>2</sup> = New Horsepower @ New Fan RPM  
RPM<sup>1</sup> = Initial Fan RPM  
RPM<sup>2</sup> = New Fan RPM

## Air-Cooled Heat Exchanger (ACHE) Applications

Air-cooled heat exchangers are used in Petrochemical, Oil and Gas Production, Power Generation, and Petroleum Refining Industries where process heat must be removed. Electric motors as large as 60 hp commonly drive the cooling fans with either large ratio V-belt or Synchronous belt drives.

According to the American Petroleum Institute (**API 661** - Air-Cooled Heat Exchangers for General Refinery Service), a safety factor of 1.8 must be used in the belt drive design process. Synchronous belt drives typically have higher horsepower capacities than V-belt drives with an equivalent width. This increased capacity results in narrower belt drives and lighter drive hardware. Synchronous belt drive systems are especially beneficial on higher horsepower heat exchanger units, and they are commonly used on new or redesigned units. V-belt drive systems are commonly used on low to medium HP fans because of their relatively low cost and good availability.

Surface rust on sheaves and sprockets is very abrasive, and rapidly wears belts. Sprockets on wet heat exchanger applications (water drawn through heat exchanger coils by fan) such as Cooling Towers, often rust and require the use of electroless nickel plating to prevent excessive corrosion. Cooling Towers are commonly used to cool large buildings (HVAC; Heating-Ventilating-Air Conditioning Systems). Misalignment is a common cause of premature belt failures on ACHE drive systems. Care should be taken to ensure proper sheave / sprocket alignment when installing the belt drive system. See **Gates Belt Drive Preventative**

**Maintenance and Safety Manual (Form 14995)** for detailed information about proper belt drive alignment.

Proper belt pre-tension is necessary to obtain optimum belt performance. This is particularly true for the high inertia start up loads seen in ACHE applications. If belt installation tension is too low, V-belts will be prone to slippage and synchronous belts will be prone to tooth jump or ratcheting. Motor controllers are sometimes used to bring the fan up to speed slowly (soft start), decreasing the chance of synchronous belt ratcheting.

## 6. Linear Motion Drives

In linear motion drives, such as a rack and pinion application, the belt is not transmitting a load in the conventional rotational manner. The two cut ends of the belt are connected to clamping fixtures and the belt travels back and forth a specified distance while rotating over a sprocket. Because of these characteristics, the drive design process will typically not follow standard catalog design procedures.

The designer will most likely have available a maximum belt load or pull which will need to be related to the belt's allowable working tension. Reasonably sized sprocket diameters are still required to prevent excessive stress fatigue in the belt. In these applications, the designer may either use endless belts and cut them, or use standard long length belting when available. Product listings are on pages 115-117. Gates Power Transmission Product Application may be consulted for design assistance.

## 7. High Performance Vehicle Applications

For special high performance applications, such as motorcycles or race car and boat supercharger drives, the design loads will typically exceed published data. Because of the extremely high loads and speeds (as much as 500 HP and belt speeds exceeding 10,000 fpm), it is necessary for the designer to contact Gates Power Transmission Product Application for additional assistance.

Although special considerations may be involved, it is important to remember that reasonable drive recommendations can be provided to the designer in most cases.

## 8. Belt Drive Registration

The three primary factors contributing to belt drive registration (or positioning) errors are belt elongation, backlash, and tooth deflection. When evaluating the potential registration capabilities of a synchronous belt drive, the system must first be determined to be either static or dynamic in terms of its registration function and requirements.

**Static Registration:** A static registration system moves from its initial static position to a secondary static position. During the process the designer is concerned only with how accurately and consistently the drive arrives at its secondary position. Potential registration errors that occur during transport are not considered. Therefore, the primary factor contributing to registration error in a static registration system is backlash. The effects of belt elongation and tooth deflection do not have any influence on the registration accuracy of this type of system.

**Dynamic Registration:** A dynamic registration system is required to perform a registering function while in motion with torque loads varying as the system operates. In this case, the designer is concerned with the rotational position of the drive sprockets with respect to each other at every point in time. Therefore, belt elongation, backlash, and tooth deflection will all contribute to registrational inaccuracies.

Further discussion about each of the factors contributing to registration error is as follows:

**Belt Elongation:** Belt elongation, or stretch, occurs naturally when a belt is placed under tension. The total tension exerted within a belt results from installation as well as working loads. The amount of belt elongation is a function of the belt tensile modulus, which is influenced by the type of tensile cord and the belt construction. The standard tensile cord used in rubber synchronous belts is fiberglass. Fiberglass has a high tensile modulus, is dimensionally stable, and has excellent flex-fatigue characteristics. If a higher tensile modulus is needed in a rubber synchronous belt, aramid tensile cords can be considered, although they are generally used to provide resistance to harsh shock and impulse loads. Aramid tensile cords used in rubber synchronous belts generally have only a marginally higher tensile modulus in comparison to fiberglass. When needed, belt tensile modulus data is available from Gates Power Transmission Product Application.

**Backlash:** Backlash in a synchronous belt drive results from clearance between the belt teeth and the sprocket grooves. This clearance is needed to allow the belt teeth to enter and exit the grooves smoothly with a minimum of interference. The amount of clearance necessary depends upon the belt tooth profile. PowerGrip® Timing Belt Drives are known for having relatively little backlash. PowerGrip® HTD® Drives have improved torque carrying capability and resist ratcheting, but have a significant amount of backlash. PowerGrip® GT®3 Drives have considerably improved torque carrying capability, and backlash characteristics in between that of PowerGrip HTD and PowerGrip Timing Drives. In special cases, alterations can be made to drive systems to further decrease backlash. These alterations often result in increased belt wear, increased drive noise and shorter drive life. Contact Gates Power Transmission Product Application for additional information.

**Tooth Deflection:** Tooth deformation in a synchronous belt drive occurs as a torque load is applied to the system, and individual belt teeth are loaded. The amount of belt tooth deformation depends upon the amount of torque loading, sprocket size, installation tension and belt type. Of the three primary contributors to registration error, tooth deflection is the most difficult to quantify. Experimentation with a prototype drive system is the best means of obtaining realistic estimations of belt tooth deflection.

Additional guidelines that may be useful in designing registration critical drive systems are as follows:

- Design with large sprockets with more teeth in mesh.
- Keep belts tight, and control tension closely.
- Design frame/shafting to be rigid under load.
- Use high quality machined sprockets to minimize radial run out and lateral wobble.

## 9. Belt Drive Noise

V-belt, synchronous belt, roller chain, and gear drives will all generate noise while transmitting power. Each type of system has its own characteristic sound. V-belt drives tend to be the quietest and synchronous belt drives are much quieter than roller chain drives. When noise is an issue, there are several design and maintenance tips that should be followed to minimize belt drive noise.

### Noise: Decibel and Frequency

Noise is an unwanted or unpleasant sound that can be described with two criteria – frequency and decibel (dB) levels. Frequency is measured in Hertz. A perfect human ear is capable of distinguishing frequencies typically from 20 to 20,000 Hertz. The human ear does generally not perceive frequencies higher than 20,000 Hertz.

The sound pressure level or intensity of noise is measured in terms of decibels (dB). The decibel has become the basic unit of measure since it is an objective measurement that approximately corresponds to the subjective measurement made by the human ear. Since sound is composed of several distinct and measurable parts and the human ear doesn't differentiate between these parts, measuring scales that approximate the human ear's reaction have been adopted. Three scales – A, B, and C are used to duplicate the ear's response over the scale's ranges. The A scale is most commonly used in industry because of its adoption as the standard in OSHA regulations. Noise described in decibels (dBA – "A" weighting for the human ear) is generally perceived as the loudness or intensity of the noise.

While the human ear can distinguish frequencies over a broad range, the ear is most sensitive in the range of normal speech – 500 to 2000 Hertz. As a consequence, this is the range most commonly of concern for noise control ("A" weighting gives more weight or emphasis to sounds in the 500 to 2000 hz range). Frequency is most closely related to what the ear hears as pitch. High frequency sounds are perceived as whining or piercing, while low frequency sounds are perceived as rumbling.

The combination of sound pressure level (dB) and frequency describes the overall level of loudness perceived by the human ear. One without the other does not adequately describe the loudness potential of the noise. For example, an 85 dBA noise at 3000 Hertz is going to be perceived as being much louder than an 85 dBA noise at 500 Hertz.

### Reducing Noise

Following proper installation and maintenance procedures, as well as some simple design alternatives can reduce belt drive noise.

### Belt Drive Tension and Alignment

Properly tensioning and aligning a belt drive will allow the belt drive to perform at its quietest level. Improper tension in synchronous belt drives can affect how the belt fits in the sprocket grooves. Proper tension minimizes tooth to groove interference, and thereby reduces belt noise.

Misaligned synchronous belt drives tend to be much noisier than properly aligned drives due to the amount of interference that is created between the belt teeth and the sprocket grooves. Misaligned synchronous belt drives also may

cause belt tracking that forces the edge of the belt to ride hard against a sprocket flange. Misalignment causing belt contact with a flange will generate noise that is easily detected.

### Noise Barriers and Absorbers

Sometimes, even properly aligned and tensioned belt drives may be too noisy for a work environment. When this occurs, steps can be taken to modify the drive guard to reduce the noise level.

Noise barriers are used to block and reflect noise. Noise barriers do not absorb or deaden the noise; they block the noise and generally reflect most of the noise back towards its point of origin. Good noise barriers are dense, and should not vibrate. A sheet metal belt guard is a noise barrier. The more complete the enclosure is, the more effective it is as a noise barrier. Noise barrier belt guards can be as sophisticated as a completely enclosed case, or as simple as sheet metal covering the front of the guard to prevent direct sound transmission.

Noise absorbers are used to reduce noise reflections and to dissipate noise energy. Noise absorbers should be used in combination with a noise barrier. Noise absorbers are commonly referred to as acoustic insulation. Acoustic insulation (the noise absorber) is used inside of belt guards (the noise barrier) where necessary. A large variety of acoustic insulation manufacturers are available to provide different products for the appropriate situation.

A combination of noise barrier (solid belt guard) and noise absorber (acoustic insulation) will provide the largest reduction in belt drive noise. While the noise reduction cannot be predicted, field experience has shown that noise levels have been reduced by 10 to 20 dBA when using complete belt guards with acoustic insulation.

## 10. Use of Flanged Sprockets

Guide flanges are needed in order to keep the belt on the sprocket. Due to tracking characteristics, even on the best aligned drives, belts will ride off the edge of the sprockets. Flanges will prevent this belt ride-off.

On all drives using stock or made-to-order sprockets, the following conditions should be considered when selecting flanged sprockets:

1. On all two-sprocket drives, the minimum flanging requirements are two flanges on one sprocket or one flange on each sprocket on opposite sides.
2. On drives where the center distance is more than eight times the diameter of the small sprocket, both sprockets should be flanged on both sides. (See Engineering Section II, Belt Installation and Drive Alignment on Pages 182 and 183.)
3. On vertical shaft drives, one sprocket should be flanged on both sides, and all the other sprockets in the system should be flanged on the bottom side only.
4. On drives with more than two sprockets, the minimum flanging requirements are two flanges on every other sprocket or one flange on every sprocket—on alternating sides around the system.

On made-to-order sprockets, flanges must be securely fastened, such as using mechanical fasteners, welding, shrink-fit or other equivalent methods.

## 11. Fixed (Nonadjustable) Center Distance

Designers sometimes attempt to design synchronous belt drive systems without any means of belt adjustment or take up. This type of system is called a Fixed Center Drive. While this approach is often viewed as being economical, and is simple for assemblers, it often results in troublesome reliability and performance problems in the long run.

The primary pitfall in a fixed center design approach is failure to consider the effects of system tolerance accumulation. Belts and sprockets are manufactured with industry accepted production tolerances. There are limits to the accuracy that the center distance can be maintained on a production basis as well. The potential effects of this tolerance accumulation is as follows:

### Low Tension:

*Long Belt with Small Sprockets on a Short Center Distance*

### High Tension:

*Short Belt with Large Sprockets on a Long Center Distance*

Belt tension in these two cases can vary by a factor of 3 or more with a standard fiberglass tensile cord, and even more with an aramid tensile cord. This potential variation is great enough to overload bearings and shafting, as well as the belts themselves. The probability of these extremes occurring is a matter of statistics, but however remote the chances seem, they will occur in a production setting. In power transmission drives, the appearance of either extreme is very likely to impact drive system performance in a negative manner.

The most detrimental aspect of fixed center drives is generally the potentially high tension condition. This condition can be avoided by adjusting the design center distance. A common approach in these designs is to reduce the center distance from the exact calculated value by some small fraction. This results in a drive system that is inherently loose, but one that has much less probability of yielding excessively high shaft loads. **NOTE:** This approach should not be used for power transmission drives since the potentially loose operating conditions could result in accelerated wear and belt ratcheting, even under nominal loading.

There are times when fixed center drive designs can't be avoided. In these cases, the following recommendations will maximize the probability of success.

1. Do not use a fixed center design for power transmission drives. Consider using a fixed center design only for lightly loaded or motion transfer applications.
2. Do not use a fixed center design for drives requiring high motion quality or registration precision.
3. When considering a fixed center design, the center distance must be held as accurately as possible, typically within 0.002"–0.003" (0.05mm–0.08mm). This accuracy often requires the use of stamped steel framework.
4. Sprockets for fixed center systems should be produced with a machining process for accuracy.

Molding and sintering processes are generally not capable of holding the finished O.D. sufficiently accurate for these systems.

5. The performance capabilities of the drive system should be verified by testing belts produced over their full length tolerance range on drive systems representing the full potential center-distance variation. Contact Gates Power Transmission Product Application for further details.
6. Contact Gates Power Transmission Product Application for design center distance recommendations, and to review the application.

## 12. Use of Idlers

Use of idlers should be restricted to those cases in which they are functionally necessary. Idlers are often used as a means of applying tension when the center distance is not adjustable.

Idlers should be located on the slack side span of the belt drive. General size recommendations are listed for inside grooved, inside flat, and backside idlers. In some cases, such as high capacity drives utilizing large sprockets, idlers as large as the smallest loaded sprocket in the system may be more appropriate.

### Idler Size Recommendations

Belt	Minimum Inside Idler	Minimum Inside Flat Idler	Minimum Backside Idler
XL PowerGrip® Timing	12 grooves	2.50" O.D.	1.00" O.D.
L PowerGrip Timing	10 grooves	4.75" O.D.	1.60" O.D.
H PowerGrip Timing	14 grooves	6.38" O.D.	2.88" O.D.
5M PowerGrip GT®3	14 grooves	2.50" O.D.	1.25" O.D.
8M PowerGrip GT3	22 grooves	4.00" O.D.	2.80" O.D.
14M PowerGrip GT3	28 grooves	7.00" O.D.	6.50" O.D.
20M PowerGrip HTD®	34 grooves	10.00" O.D.	11.00" O.D.

Outside or backside idlers should be flat and uncrowned; flanges may or may not be necessary. Drives with flat inside idlers should be tested, as noise and belt wear may occur.

Idler arc of contact should be held to a minimum. All idlers should be rigidly mounted in place to minimize movement or deflection during drive startup and operation.

## 13. Specifying Shaft Locations in Multipoint Drive Layouts

When collecting geometrical layout data for multiple sprocket drive layouts, it is important to use a standard approach that is readily understood and usable for drive design calculations. This is of particular importance when the data will be provided to Gates Application Engineering for analysis.

### Multipoint Drive

When working with a drive system having more than three shafts, the geometrical layout data must be collected in terms of X-Y coordinates for analysis.

For those unfamiliar with X-Y coordinates, the X-Y cartesian coordinate system is commonly used in mathematical and engineering calculations and utilizes a horizontal and vertical axis as illustrated in Fig. 4.

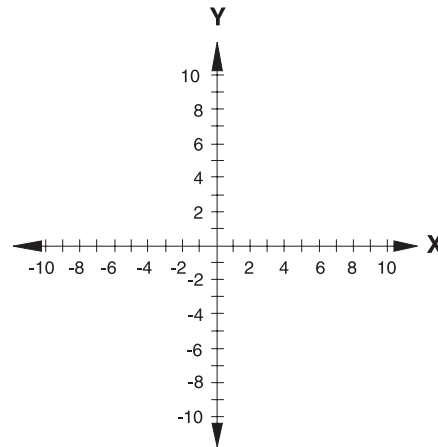


Figure 4

The axes cross at the zero point, or origin. Along the horizontal, or "X" axis, all values to the right of the zero point are positive, and all values to the left of the zero point are negative. Along the vertical, or "Y" axis, all values above the zero point are positive, and all values below the zero point are negative. This is also illustrated in Figure 4.

When identifying a shaft center location, each X-Y coordinate is specified with a measurement in the "X" as well as the "Y" direction. This requires a horizontal and vertical measurement for each shaft center in order to establish a complete coordinate. Either English or Metric units of measurement may be used.

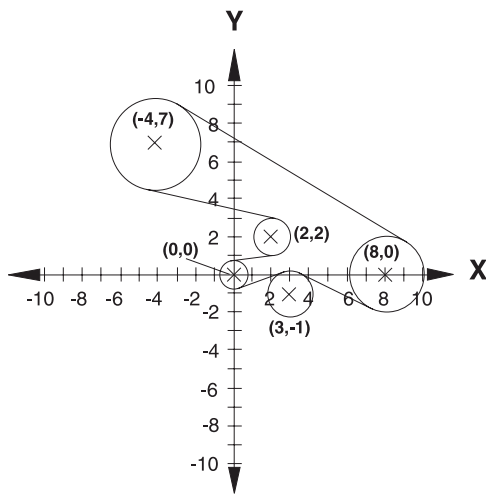
A complete coordinate is specified as follows:

(X,Y) where X = measurement along X-axis (horizontal)  
Y = measurement along Y-axis (vertical)

In specifying X-Y coordinates for each shaft center, the origin (zero point) must first be chosen as a reference. The driveR shaft most often serves this purpose, but any shaft center can be used. Measurements for all remaining shaft centers must be taken from this origin or reference point. The origin is specified as (0,0).

An example layout of a 5-point drive system is illustrated





**Figure 5**

in Figure 5. Here each of the five shaft centers are located and identified on the X-Y coordinate grid.

When specifying parameters for the moveable or adjustable shaft (for belt installation and tensioning), the following approaches are generally used:

**Fixed Location:** Specify the nominal shaft location coordinate with a movement direction.

**Slotted Location:** Specify a location coordinate for the beginning of the slot, and a location coordinate for the end of the slot along its path of linear movement.

**Pivoted Location:** Specify the initial shaft location coordinate along with a pivot point location coordinate and the pivot radius.

Performing belt length and idler movement/positioning calculations by hand can be quite difficult and time consuming. With a complete geometrical drive description, we can make the drive design and layout process quite simple for you. Contact Gates Power Transmission Product Application for computer-aided assistance.

## 14. Minimum Belt Wrap and Tooth Engagement

Horsepower ratings listed in this catalog are based on a minimum of six teeth in mesh between the belt and the sprocket. The ratings must be corrected for excessive tooth loading if there are less than six teeth in mesh. For nonstock drives not listed in the Drive Selection Tables, the teeth in mesh may be calculated by using this formula: In cases where fewer than six teeth are in full contact, 20%

### Formula 1

$$\text{Teeth in Mesh} = \left[ 0.5 - \left( \frac{D-d}{6C} \right) \right] N_s$$

Where: D = pitch diameter, large sprocket, inches  
d = pitch diameter, small sprocket, inches  
C = center distance between shafts, inches  
N<sub>s</sub> = number of grooves in small sprocket

of the horsepower rating must be subtracted for each tooth less than six not in full contact. After computing the teeth in mesh, the belt rating should be multiplied by the appropriate K<sub>TM</sub> factor shown in the following table. In addition to the number of teeth in mesh, some drives

### Teeth In Mesh Correction Factor

Teeth in Mesh	Factor K <sub>TM</sub>
6 or more	1.00
5	0.80
4	0.60
3	0.40
2	0.20

with more than two shafts may have a greater potential for the belts to ratchet where loaded sprockets have six teeth in mesh, but a small arc of contact. In order to minimize this condition, each loaded sprocket in the drive system should have an arc of contact or belt wrap angle of at least 60 degrees. Non-loaded idler sprockets do not have tooth meshing or wrap angle requirements.

## 15. Adverse Operating Environments

### Debris

Be very careful when using synchronous drives in high debris environments. Debris can be more damaging to a positive belt drive than a V-belt drive, which has a tendency to remove debris from the sheave grooves through drive operation. Entrapment of debris in synchronous drives is a major concern. Debris can be packed into sprocket grooves causing improper belt tooth engagement, reducing belt life and accelerating belt and sprocket wear. Care must be taken to provide adequate shielding to drives in environments where debris is likely. Completely enclosing a synchronous belt drive may be acceptable. Since synchronous belts generate minimal heat during drive operation, air circulation is not critical except where extremely high temperatures already are present. Depending on the type and abrasive characteristics of the debris, excessive wear can be generated on both belt and sprockets.

### Temperature

Belt performance is generally unaffected in ambient temperature environments between -30° and 185°F (-34° and 85°C). Temperature extremes beyond these limits should be reviewed by Gates Power Transmission Product Application.

### Chemical Resistance

Based on lab and field testing, PowerGrip® belts provide excellent resistance to most chemicals. Actual performance characteristics will be determined by the degree of concentration of the chemical, the time of exposure and the type of exposure (drip, splash, immersion, etc.). In addition to possible belt degradation, these chemicals can act as a lubricant in the drive system. As with any positive belt drive, PowerGrip drives which run where excessive lubrication is present have an increased tendency to ratchet (See Engineering Section II-14, Self Generated Tension on Page 184). Special attention should be given to assure that recommended tension is maintained (See Engineering Section II-8, Belt Installation Tension on Page 180).

### High Humidity/Corrosive Environments

Many industrial applications face problems associated with rusting parts. Numerous applications in the food and beverage industry are located in areas that require periodic wash down. Unless a drive is completely shielded and protected from wash down, rust and corrosion will be rapidly apparent in these types of environments. This is equally true of sprockets when used in very wet or humid environments, such as seen with air moving drives on cooling towers or wood kilns. The constant effects of the wet air surrounding the belt drive can cause excessive rust.

Corrosion attacks sprocket grooves, building up rust deposits. The corrosion will increase over time, building up in the sprocket grooves and non-driving surfaces (flanges, sprocket faces, bushing face). Sprockets with corrosion in the grooves will rapidly wear the belt's teeth and wear through the abrasion resistant tooth fabric, resulting in tooth shear and premature belt failure.

When an application is in a corrosive environment, the designer may elect to use special sprockets and bushings to prevent premature failures. Using special stainless steel sprockets and bushings or electroless nickel-plated sprockets can help eliminate corrosion as a cause of failure on belt drives located in these damaging environments.

## Section II

### Engineering Design Considerations

All synchronous belt drives require proper installation procedures for optimum performance. In addition, topics such as tooth profile advantages, sprocket rim speed limitations, efficiency, and tolerances are common to all Gates synchronous belt drives.

1. **Belt Storage and Handling**
2. **Center Distance and Belt Length**
3. **Tooth Profiles**
4. **Static Conductivity**
5. **Sprocket Diameter - Speed**
6. **Efficiency**
7. **Belt Tolerances**
8. **Belt Installation Tension**
9. **Center Distance Allowances for Installation and Tensioning**
10. **Drive Alignment**
11. **Belt Installation**
12. **Belt Pull Calculations**
13. **Bearing/Shaft Load Calculations**
14. **Self-Generated Tension**

Each of these circumstances and special considerations are reviewed below.

#### 1. Belt Storage and Handling

##### Storage Recommendations

In order to retain their serviceability and dimensions, proper storage procedures must be followed for synchronous belts. Quite often premature belt failures can be traced to improper belt storage procedures that damaged the belt before it was installed on the drive. By following a few guidelines, these types of belt failures can be avoided.

##### Recommended

Belts should be stored in a cool and dry environment with no direct sunlight. Ideally, belts should be stored at less than 85° F and with lower than 70% relative humidity.

**Belts should be stored in original packaging.**

##### Not Recommended

Belts should not be stored near windows, which may expose the belts to direct sunlight or moisture.

Belts should not be stored near heaters, radiators, or in the direct airflow of heating devices.

Belts should not be stored near any devices that generate ozone such as transformers and electric motors.

Belts should not be stored where they are exposed to solvents or chemicals in the atmosphere.

Do not store belts on the floor unless they are in a protective container. Floor locations are exposed to traffic that may damage the belts.

Do not crimp belts during handling or while being stored. To avoid this, belts must not be bent to diameters smaller than what is recommended (minimum recommended sprocket diameter for inside bends and 1.3 times the minimum recommended sprocket diameter for back side bends). Do not use ties or tape to pull belt spans tightly together near the end of the belt. Do not hang on a small diameter pin that suspends all of the belt weight and bends the belt to a diameter smaller than the minimum recommended sprocket diameter. Improper storage will damage the tensile cord and the belt will fail prematurely. Handle belts carefully when removing from storage and moving to the application.

### Storage Effects

Belts may be stored up to six years if properly stored at temperatures less than 85°F and relative humidity less than 70%.

For every 15°F increase in storage temperature above 85°F, the time the belt can be stored without reduced performance decreases by one-half. Belts should never be stored at temperatures above 115°F.

At relative humidity levels above 70%, fungus or mildew may form on stored belts. This has minimal affect on belt performance, but should be avoided if possible.

When equipment is stored for prolonged periods of time (over six months), the belt tension should be relaxed so that the belt does not take a set, and the storage environment should meet the 85°F and 70% or less relative humidity condition. If this is not possible, belts should be removed and stored separately in a proper environment.

## 2. Center Distance and Belt Length

The approximate relationship between a center distance and belt pitch length is given by the following formula:

### Formula 2

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

Where:  $L_p$  = belt pitch length, inches  
 $D$  = diameter of large sprocket, inches  
 $d$  = diameter of small sprocket, inches  
 $C$  = center distance, inches

A more precise formula is given below:

### Formula 3

$$L_p = 2C \cos \varphi + \frac{\pi(D + d)}{2} + \frac{\pi \varphi (D - d)}{180}$$

Where:  $L_p$  = belt pitch length, inches  
 $C$  = center distance, inches  
 $D$  = pitch diameter of large sprocket, inches  
 $d$  = pitch diameter of small sprocket, inches

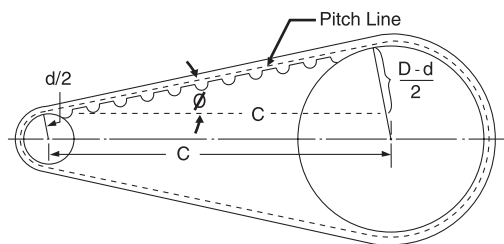
$$\varphi = \sin^{-1} \left( \frac{D - d}{2C} \right) \text{ degrees}$$

The approximate center distance can be found by this formula:

### Formula 4

$$C = \frac{K + \sqrt{K^2 - 32(D - d)^2}}{16}$$

Where:  $K = 4L_p - 6.28(D + d)$



The exact center distance can be calculated using an iterative process between the center distance (Formula 4) and belt length (Formula 3) equations. The exact center distance has been found when the two equations converge. The pitch length increment of a synchronous belt is equal to a multiple of the belt pitch.

## 3. Tooth Profiles

Conventional trapezoidal belts (MXL, XL, etc.) were the earliest developments of positive drive belts. In more recent years, new curvilinear profiles have entered the market. The most predominant of these profiles is the HTD® system (5mm, 8mm, etc.). While these curvilinear profiles provide many advantages, they also can provide significant disadvantages.

With the development of the Gates GT® tooth profile, the combined advantages of the various curvilinear profiles have now been optimized. Characteristics such as ratcheting resistance, improved load/life and noise reduction were prime factors in the design of the Gates GT profile. Additionally, it allowed optimization in incorporating premium materials into its superior construction.

The GT tooth profile is based on the tractrix mathematical function. Engineering handbooks describe this function as a "frictionless" system. This early development by Schiele is described as an involute form of a catenary. With this system, the belt and sprocket teeth move substantially tangentially during entry and exit, thus improving significantly

the belt's performance characteristics. This is illustrated in Fig. 6. For information on belt/sprocket interchangeability between various Gates products as well as interchange with other manufacturers, consult Gates Belt/Sprocket Interchange Guide (12998-B) or contact Gates Power Transmission Product Application.

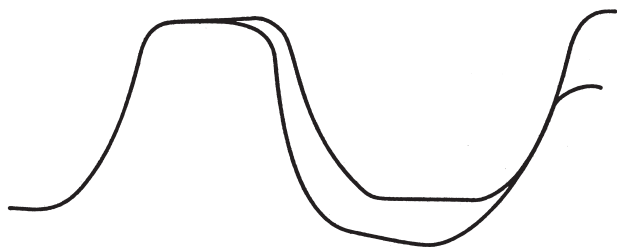


Figure 6

#### 4. Static Conductivity

Static discharge can pose a hazard with belt drives that operate in potentially explosive environments. Static discharge can also interfere with radios, electronic instruments, or controls used in a facility. While uncommon, static discharge can also cause bearing pitting if the discharge travels through bearings. Effectively dissipating static charges from belt drives can prevent these issues. One way of achieving this is with conductive belt constructions.

Industry recognized standards for belt conductivity specify test procedures as well as allowable measured values for belt resistance. The Association for Rubber Products Manufacturers (ARPM, formerly RMA) publication IP-3-3 applies to both V-belts and synchronous belts. The international Standards Organization (ISO) standard 9563 applies to synchronous belts only, and is recognized more broadly on an international basis.

PowerGrip® Timing and PowerGrip HTD® belts in endless, Twin Power® and long length belting forms do not meet the static conductivity requirements specified in ARPM Bulletin IP 3-3 nor ISO 9563 so are not considered to be static conductive. These belts can be manufactured in a static conductive construction on a made-to-order basis.

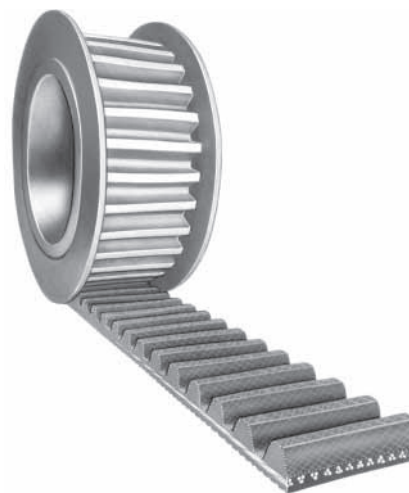
8M and 14M PowerGrip GT®3 belts are conductive in accordance with ISO 9563, but not 12 mm wide 8M PowerGrip GT3 belts. 5M PowerGrip GT3 and 5M, 8M and 14M Twin Power and long length belting forms do not meet static conductivity requirements, but can be manufactured in a static conductive construction on a made-to-order basis.

When belts are used in hazardous environments, additional considerations should be given to assure that accidental static spark discharges do not occur. Note that industry ARPM IP-3-3 and ISO 9563 standards for belt conductivity apply only to new belts. Conductivity properties is known to decline over time after belts are placed into service, but are not generally monitored. Also note that dissipation of static charges to ground occurs initially between belt teeth and the sprockets. Unusual or excessive debris or contaminants on belt contact surfaces or sprocket grooves may hinder the conductivity of static charges, so should be cleaned and removed. Finally

note that a conductive path all the way from the sprockets through shafts, bearings, structure and other system components to ground is critical in safely dissipating static charges.

As an additional measure of protection in hazardous environments, a static-conductive brush or similar device should be employed to bleed off any residual static buildup that might remain around the belt. The user must ensure that belt drives operating in potentially hazardous or explosive environments are designed and installed in accordance with existing building codes, OSHA requirements, and/or recognized safety-related organizations.

#### 5. Sprocket Diameter—Speed



Drives shaded in the Belt Width Selection Tables use sprocket diameters that may reduce belt life. The amount of reduction will depend on speed—the higher the speed, the greater the reduction. The drives are included for use where speed ratio or space requirements must be met. Blanks in the lower right-hand portions of the Belt Width Selection Tables occur because sprocket rim speed exceeds 6,500 feet per minute. Centrifugal forces developed beyond this speed may prohibit the use of stock gray cast iron sprockets. For rim speeds above 6,500 feet per minute, contact Gates Power Transmission Product Application for other alternatives.

Sprockets Recommended
For maximum performance, we recommend using Gates PowerGrip® belts only with Gates PowerGrip® Sprockets

#### 6. Efficiency

When properly designed and applied, PowerGrip belt drive efficiency will be as high as 98%. This high efficiency is primarily due to the positive, no slip characteristic of synchronous belts. Since the belt has a thin profile, it flexes easily, thus resulting in low hysteresis losses as evidenced by low heat buildup in the belt.

Gates synchronous belts are uniquely constructed because they use high performance materials. Optimization of these high-technology features provide maximum performance and efficiency.

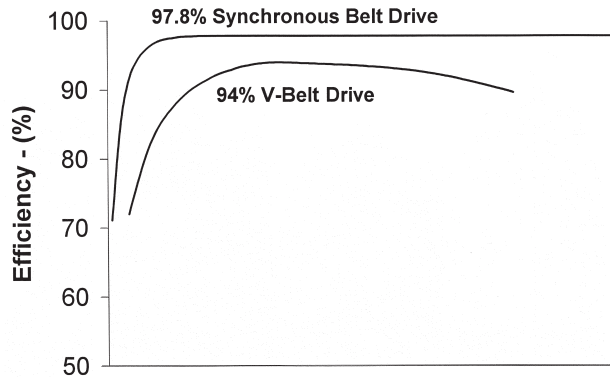
Synchronous belt drive efficiency can be simply defined as shown in the following equation:

When examining the loss of energy, it is necessary to con-

$$\text{Efficiency, percent} = \frac{\text{DN RPM} \times \text{DN Torque}}{\text{DR RPM} \times \text{DR Torque}} \times 100$$

sider belt losses in terms of shaft torque and shaft speed. Torque losses result from bending stress and friction. Chain drives running unlubricated may generate significant heat build up due to increased friction in the roller joints. Even properly lubricated chains running at higher speeds tend to throw off the oil due to centrifugal forces, making it difficult to maintain proper lubrication at the load bearing surfaces. Consequently, chain drives are typically only 92-98% efficient.

Speed losses result from belt slip and creep. Unlike V-belts, slip is not a factor with synchronous belts. Well maintained V-belt drives are typically in the range of 95-98% efficient. However, on a poorly designed or maintained drive, the efficiency may drop as much as 5% or more. If proper maintenance cannot be scheduled for a V-belt drive or it is located in an inaccessible area, a positive belt drive system should be considered.



Increasing DriveN Torque

The belt drive is only part of the total system. Motors should be properly sized for the application. They must have sufficient capacity to meet the power needs, yet over-designed motors will lead to electrical inefficiencies. DriveN machines also may have inherent inefficiencies which may contribute to overall system efficiency.

## 7. Belt Tolerances

These tolerances are for reference only. For fixed center drive applications and special tolerances, contact Gates Power Transmission Product Application.

Stock Belt Center Distance Tolerances			
Belt Length	(mm)	Center Distance Tolerance	(mm)
	(in)		(in)
over 127	to 254	± 0.20	
5	10	± .008	
over 254	to 381	± 0.23	
10	15	± .009	
over 381	to 508	± 0.25	
15	20	± .010	
over 508	to 762	± 0.30	
20	30	± .012	
over 762	to 1016	± 0.33	
30	40	± .013	
over 1016	to 1270	± 0.38	
40	50	± .015	
over 1270	to 1524	± 0.41	
50	60	± .016	
over 1524	to 1778	± 0.43	
60	70	± .017	
over 1778	to 2032	± 0.46	
70	80	± .018	
over 2032	to 2286	± 0.49	
80	90	± .019	
over 2286	to 2540	± 0.52	
90	100	± .020	
over 2540	to 2794	± 0.54	
100	110	± .021	
over 2794	to 3048	± 0.56	
110	120	± .022	
over 3048	to 3302	± 0.58	
120	130	± .023	
over 3302	to 3556	± 0.60	
130	140	± .024	
over 3556	to 3810	± 0.63	
140	150	± .025	
over 3810	to 4064	± 0.66	
150	160	± .026	
over 4064	to 4318	± 0.69	
160	170	± .027	
over 4318	to 4572	± 0.72	
170	180	± .028	
over 4572		add ± .03 for	
180		every 254 increment	10

Stock Belt Width Tolerances									
Belt Width (mm) (in)		Belt Width Tolerances							
		Belt Lengths (mm) (in)		Belt Lengths (mm) (in)		Belt Lengths (mm) (in)		Belt Lengths (mm) (in)	
0 to 33		0	838	33	1676	33	1676	66	1676
over 0.438 to 1.500		+ .8	- .8	+ .8	- 1.2	+ .8	- 1.2	+ .8	- 1.2
0.032 to 0.032		0.032	0.032	0.032	0.047	0.032	0.047	0.032	0.047
38.1 to 50.8		+ .8	- 1.2	+ 1.2	- 1.2	+ 1.2	- 1.6	+ 1.2	- 1.6
over 1.500 to 2.000		0.032	0.047	0.047	0.047	0.047	0.047	0.047	0.063
50.8 to 63.5		+ 1.2	- 1.2	+ 1.2	- 1.6	+ 1.6	- 1.6	+ 1.6	- 1.6
over 2.000 to 2.500		0.047	0.047	0.047	0.063	0.063	0.063	0.063	0.063
63.5 to 76.5		+ 1.2	- 1.6	+ 1.6	- 1.6	+ 1.6	- 2.9	+ 1.6	- 2.9
over 2.500 to 3.000		0.047	0.063	0.063	0.063	0.063	0.063	0.063	0.078
76.2 to 101.6		+ 1.6	- 1.6	+ 1.6	- 2.0	+ 2.0	- 2.0	+ 2.0	- 2.0
over 3.000 to 4.000		0.063	0.063	0.063	0.078	0.078	0.078	0.078	0.078
101.6 to 177.8		+ 2.4	- 2.4	+ 2.4	- 2.8	+ 2.4	- 3.2	+ 2.4	- 3.2
over 4.000 to 7.000		0.094	0.094	0.094	0.109	0.094	0.125	0.094	0.125
177.8 to 7.000						+ 4.8	- 6.4	+ 0.188	- 0.250

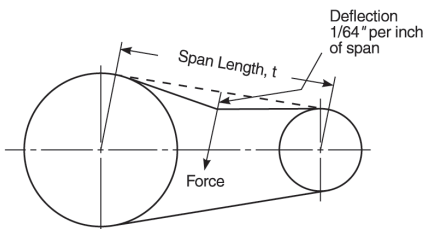
## 8. Belt Installation Tension

### Standard Belt Tensioning Procedure

When installing a Gates PowerGrip® belt:

- Be sure it is tensioned adequately to prevent tooth jumping (ratcheting) under the most severe load conditions which the drive will encounter during operation.
- Avoid extremely high tension which can reduce belt life and possibly damage bearings, shafts and other drive components.

The proper way to check belt tension is to use a tension tester. Gates has a variety of tension testers, ranging from the simple spring scale type tester to the sophisticated Sonic Tension Meter. The spring scale type tester is used by measuring how much force is required to deflect the belt at the center of its span by a specified distance (force deflection method), as shown in the sketch below.



The Sonic Tension Meter measures the vibration of the belt span and instantly converts the vibration frequency into belt static tension (span vibration method).

When you wish to use a numerical method for calculating recommended belt installation tension values, the following procedure may be used.

### STEP 1: Calculate the required base static installation tension.

Use Formula 5 to calculate the required base static installation tension.

#### Formula 5

$$T_{st} = \frac{20HP}{S} + MS^2$$

Where:  $T_{st}$  = base static installation tension, Pounds

HP = Horsepower

$$S = \frac{PD \times RPM}{3820}$$

M = Value from Table 3

PD = Sprocket Pitch Diameter, inches

RPM = Sprocket revolutions per minute

Table 3

Pitch	Belt Width	M	Y	Min T <sub>st</sub> (lb) per span
5M PowerGrip GT3	9mm	0.17	14.88	9.0
	15mm	0.29	24.80	15.0
	25mm	0.48	41.33	25.0
8M PowerGrip GT3	12mm	0.32	25.38	13.5
	20mm	0.54	42.29	22.5
	30mm	0.81	63.44	33.8
	50mm	1.35	105.73	56.2
	85mm	2.29	179.74	95.6
14M PowerGrip GT3	40mm	1.80	93.04	106.0
	55mm	2.48	127.93	145.8
	85mm	3.83	197.72	225.2
	115mm	5.18	267.50	304.8
	170mm	7.66	395.43	450.5
5M PowerGrip HTD	15mm	0.27	24.80	13.5
	25mm	0.45	41.33	22.5
20M PowerGrip HTD	115mm	6.84	402.35	425.5
	170mm	10.11	594.78	629.0
	230mm	13.68	804.70	851.0
	290mm	17.25	1014.63	1073.0
	340mm	20.23	1189.56	1258.0
XL PowerGrip Timing	1/4 in.	0.07	3.30	3.2
	3/8 in.	0.11	4.94	4.9
L PowerGrip Timing	1/2 in.	0.19	7.20	12.5
	3/4 in.	0.28	10.80	18.8
	1 in.	0.38	14.40	25.0
H PowerGrip Timing	3/4 in.	0.35	32.23	56.2
	1 in.	0.46	42.97	75.0
	1-1/2 in.	0.69	64.45	112.5
	2 in.	0.92	85.94	150.0
	3 in.	1.38	128.91	225.0
XH PowerGrip Timing	2 in.	2.67	129.88	210.0
	3 in.	4.00	194.82	315.0
	4 in.	5.34	259.77	420.0
XXH PowerGrip Timing	2 in.	3.52	144.04	260.0
	3 in.	5.28	216.06	390.0
	4 in.	7.04	288.09	520.0
	5 in.	8.80	360.11	650.0

Because of the high performance capabilities of PowerGrip belts, it is possible to design drives that have significantly greater load than are necessary to carry the actual design load. Consequently, Formula 5 can provide  $T_{st}$  values less than are necessary for the belt to operate properly, resulting in poor belt performance and reduced service life.

If a more appropriately sized drive cannot be designed, minimum recommended  $T_{st}$  values are provided in Table 3 to assure that the PowerGrip® belts function properly when lightly loaded.

Always use the greater  $T_{st}$  value; i.e., from  $T_{st}$  Formula 5 or Table 3.

**NOTE:** When applying static belt tension values directly, multiply the required base static installation tension ( $T_{st}$ ) calculated in Formula 5 by the following factors:

For New Belts:

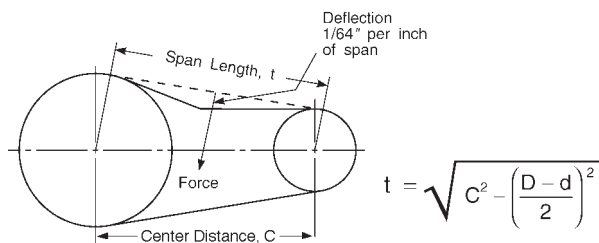
- Minimum Static Tension =  $1.0 \times T_{st}$
- Maximum Static Tension =  $1.1 \times T_{st}$

For Used Belts:

- Minimum Static Tension =  $0.7 \times T_{st}$
- Maximum Static Tension =  $0.8 \times T_{st}$

## STEP 2: Calculate the minimum and maximum recommended deflection forces.

A. Measure the span length of your drive (see sketch).



B. New belt minimum recommended force:

### Formula 6

$$\text{deflection force, Min.} = \frac{1.0 T_{st} + \left(\frac{t}{L}\right) Y}{16}, \text{ lb}_f$$

C. New belt maximum recommended force:

### Formula 7

$$\text{deflection force, Max.} = \frac{1.1 T_{st} + \left(\frac{t}{L}\right) Y}{16}, \text{ lb}_f$$

Where:  $T_{st}$  = Base Static tension,  $\text{lb}_f$   
 $t$  = span length, inches  
 $L$  = belt pitch length, inches  
 $Y$  = constant from Table 3

USED BELT NOTE: For re-installation of a used belt, a recommended tension of  $0.7 T_{st}$  to  $0.8 T_{st}$  value should be used in calculating the deflection forces, instead of the  $1.0 T_{st}$  to  $1.1 T_{st}$  shown for new belts.

## STEP 3: Applying the tension.

### Force deflection tension method

- A. At the center of the span ( $t$ ) apply a force perpendicular to the span large enough to deflect the belt on the drive  $1/64$  inch per inch of span length from its normal position. One sprocket should be free to rotate. Be sure the force is applied evenly across the entire belt width. If the belt is a wide synchronous belt place a piece of steel or angle iron across the belt width and deflect the entire width of the belt evenly.
- B. Compare this deflection force with the range of forces calculated in Step 2.
  1. If it is less than the minimum recommended deflection force, the belt should be tightened.
  2. If it is greater than the maximum recommended deflection force, the belt should be loosened.

### Span vibration tension method

The Sonic Tension Meter detects the vibration frequency in the belt span, and converts that measurement into the actual static tension in the belt. To use the Sonic Tension Meter, begin by entering the belt unit weight, belt width, and the span length. To measure the span vibration, press the "Measure" button on the meter, tap the belt span, and hold the microphone approximately  $1/4$ " away from the back of the belt. The Sonic Tension Meter will display the static tension, and can also display the span vibration frequency.

The belt unit weights for use with the Gates Sonic Tension Meter are shown in the following table.

Belt Product Family	Belt Cross Section	Adjusted Belt Weight (grams/meter)
PowerGrip® Timing	XL	2.4
	L	3.2
	H	3.9
	XH	11.3
PowerGrip Timing Twin Power®	XXH	14.9
	XL	1.9
	L	3.2
PowerGrip GT®3 (5M, 8M, 14M) and HTD® (20M)	H	4.6
	5M	5.8
	8M	5.5
	14M	9.7
PowerGrip GT2 Twin Power	20M	12.8
	8M	6.93
	14M	11.44

## 9. Center Distance Allowances for Installation and Tensioning

Since fixed center drives are not recommended, center distance allowances for a Gates PowerGrip® belt drive are necessary to assure that the belt can be installed without damage and then tensioned correctly. The standard installation allowance is the minimum decrease in center distance required to install a belt when flanged sprockets are removed from their shafts for belt installation. This is shown in the first column of Table 4. This table also lists the minimum increase in center distance required to assure that a belt can be properly tensioned over its normal lifetime. If a belt is to be installed over flanged sprockets without removing them, the additional center distance allowance for installation shown in the second table below must be added to the first table data.

**Table 4**

**Center Distance Allowance For Installation and Tensioning**

Length Belt (mm) (in)	Standard Installation Allowance (Flanged Sprockets Removed For Installation) (mm) (in)	Tensioning Allowance (All Drives) (mm) (in)
Up to 125 5	0.5 0.02	0.5 0.02
Over 125 to 250 5 to 10	0.8 0.03	0.8 0.03
Over 250 to 500 10 to 20	1.0 0.04	0.8 0.03
Over 500 to 1000 20 to 40	1.8 0.07	0.8 0.03
Over 1000 to 1780 40 to 70	2.8 0.10	0.8 0.04
Over 1780 to 2540 70 to 100	3.3 0.13	1.0 0.04
Over 2540 to 3300 100 to 130	4.1 0.16	1.3 0.05
Over 3300 to 4600 130 to 180	4.8 0.19	1.3 0.05
Over 4600 to 6900 180 to 270	5.6 0.22	1.3 0.05

**Additional Center Distance Allowance For Installation Over Flanged Sprockets\***

(Add to Installation Allowance In Table No. 4)

Pitch	One Sprocket Flanged (mm) (in)	Both Sprockets Flanged (mm) (in)
0.080" (MXL)	8.4 0.33	12.4 0.49
0.200" (XL)	11.7 0.46	18.0 0.71
0.375" (L)	16.3 0.64	21.6 0.85
0.500" (H)	16.3 0.64	24.4 0.85
5mm	13.5 0.53	19.1 0.75
8mm	21.8 0.86	33.3 1.31
14mm	31.2 1.23	50.0 1.97
20mm	47.0 1.85	77.5 3.05

\* For drives that require installation of the belt over one sprocket at a time, use the value for "Both Sprockets Flanged"

## 10. Drive Alignment

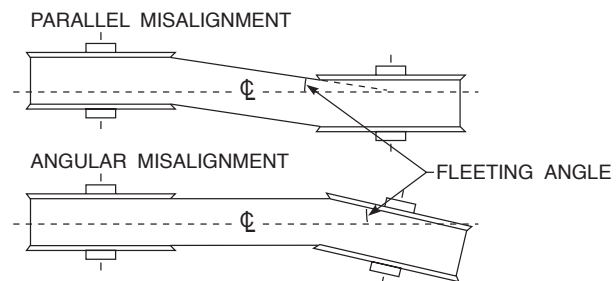
Provision should be made for center distance adjustment, according to the two tables on this page, or to change the idler position so the belt can be slipped easily onto the drive. When installing a belt, never force it over the flange. This will cause internal damage to the belt tensile member.

Synchronous belts typically are made with high modulus tensile members which provide length stability over the belt life. Consequently, misalignment does not allow equal load distribution across the entire belt top width. In a misaligned drive, the load is being carried by only a small portion of the belt top width, resulting in uneven belt wear and premature tensile failure.

There are two types of misalignment: parallel and angular (See Fig. 7). Parallel misalignment is where the driveR and driveN shafts are parallel, but the two sprockets lie in different planes. When the two shafts are not parallel, the drive is angularly misaligned.

A fleeting angle is the angle at which the belt enters and exits the sprocket, and equals the sum of the parallel and angular misalignments.

Any degree of sprocket misalignment will result in some reduction of belt life, which is not accounted for in the normal drive design procedure. Misalignment of all synchronous belt drives should not exceed 1/4° or 1/16" per foot of linear distance. Misalignment should be checked with a good straight edge or by using a laser alignment tool. The straight edge tool should be applied from driveR to driveN, and then from driveN to driveR so that the total effect of parallel and angular misalignment is made visible.



**Figure 7**

Drive misalignment can also cause belt tracking problems. However, light flange contact by the belt is normal and won't affect performance.

For those drives in which the center distance is greater than eight times the small sprocket diameter, belt tracking can be a problem. In these cases, the parallel position of the two sprockets may need to be adjusted until only one flange guides the belt in the system and the belt tracks fully on all sprockets. Regardless of the drive center distance, the optimum drive performance will occur with the belt lightly contacting one flange in the system. The worst case is for the belt to contact flanges on opposite sides of the system. This traps the belt between opposite flanges and can force the belt into undesirable parallel misalignment. Improper installation of the bushing can result in the bush-



ing/ sprocket assembly being “cocked” on the shaft. This leads to angular misalignment and sprocket wobble. Be sure to follow the instructions provided with the bushings.

## 11. Belt Installation

During the belt installation process, it is very important the belt be fully seated in the sprocket grooves before applying final tension. Serpentine drives with multiple sprockets and drives with large sprockets are particularly vulnerable to belt tensioning problems resulting from the belt teeth being only partially engaged in the sprockets during installation. In order to prevent these problems, the belt installation tension should be evenly distributed to all belt spans by rotating the system by hand. After confirming that belt teeth are fully engaged in the sprocket grooves, belt tension should be rechecked and verified. Failure to do this may result in an undertensioned condition with the potential for belt ratcheting.

## 12. Belt Pull Calculations

When the machine designer requests shaft load calculations from the drive designer, the following procedure can be applied:

### A. Calculate Belt Span Tensions

Belt pull is the vector sum of  $T_T$  and  $T_S$ , the tightside and slackside tensions.  $T_T$  and  $T_S$  may be calculated using the following formulas:

#### Formula 8

$$T_T = \frac{144,067 \text{ HP}}{(\text{PD})(\text{RPM})}$$

#### Formula 9

$$T_S = \frac{18,008 \text{ HP}}{(\text{PD})(\text{RPM})}$$

Where: HP = Horsepower  
 PD = Sprocket Pitch Diameter (in)  
 RPM = Sprocket Speed (rev/min)

### B. Solution For Both Magnitude and Direction

The vector sum of  $T_T$  and  $T_S$  can be found so that the direction of belt pull, as well as magnitude, is known. This is necessary if belt pull is to be vectorially added to sprocket weight, shaft weight, etc., to find true bearing loads. In this case, the easiest method of finding the belt pull vector is by graphical addition of  $T_T$  and  $T_S$ . If only the magnitude of belt pull is needed, numerical methods for vector additions are faster to use.

If both direction and magnitude of belt pull are required, the vector sum of  $T_T$  and  $T_S$  can be found by graphical vector addition as shown in Fig. 8.  $T_T$  and  $T_S$  vectors are drawn to a convenient scale and parallel to the tightside and slackside, respectively. Fig. 8 shows vector addition for belt pull on the motor shaft. The same procedures can be used for finding belt pull on the driveN shaft. This method may be used for drives using three or more sprockets or idlers. For two-sprocket drives, belt pull on the driveR and driveN

shafts is equal but opposite in direction. For drives using idlers, both magnitude and direction may be different.

### C. Solution For Magnitude Only

If only the magnitude of belt pull is needed, follow the steps below. Use this method for drives with two sprockets. Use the graphical method shown if the drive uses idlers.

1. Add  $T_T$  and  $T_S$
2. Using the value of  $\frac{D-d}{C}$  for the drive, find the vector sum correction factor using Fig. 9, where:

D = large diameter  
 d = small diameter  
 C = center distance

Or, use the arc of contact on the small sprocket if known.

3. Multiply the sum of  $T_T$  plus  $T_S$  by the vector sum correction factor to find the vector sum of  $T_T$  plus  $T_S$ .

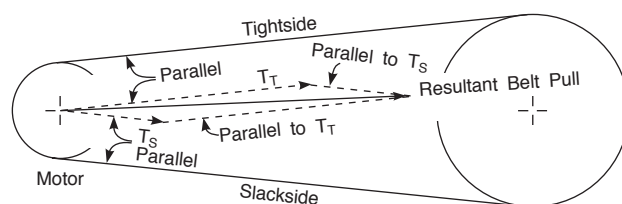


Figure 8

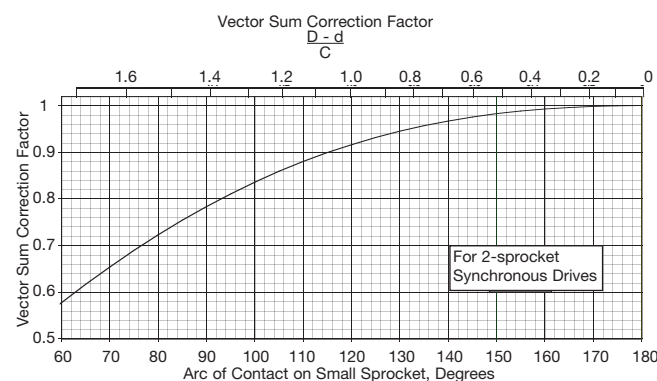


Figure 9

## 13. Bearing / Shaft Load Calculations

### A. Shaft Load Calculations

If true side load on the shaft, including sprocket weight, is desired, the sprocket weight can be added to the belt pull using the same graphical method shown in Fig. 8. The sprocket weight vector is vertical toward the ground. Weights for standard sprockets are shown in the sprocket specification tables.

## B. Bearing Load Calculations

In order to find actual bearing loads, it is necessary to know weights of machine components and the value of all other forces contributing to the load. However, it is sometimes desirable to know the bearing load contributed by the synchronous drive alone. Bearing loads resulting from a synchronous belt drive can be calculated knowing bearing placement with respect to the sprocket center and the shaft load as previously calculated. For rough estimates, machine designers sometimes use belt pull alone, ignoring sprocket weight. If accuracy is desired, or if the sprocket is unusually heavy, actual shaft load values including sprocket weight should be used.

### A. Overhung Sprocket

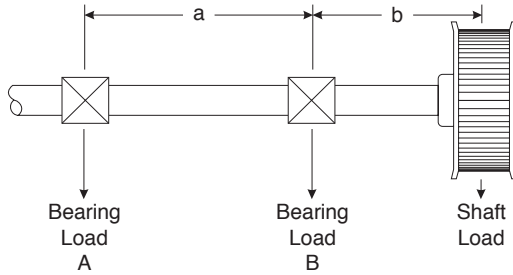


Figure 10

#### Formula 10

$$\text{Load at B, (lb)} = \frac{\text{Shaft Load} \times (a + b)}{a}$$

#### Formula 11

$$\text{Load at A, (lb)} = \text{Shaft Load} \times \frac{b}{a}$$

Where: a and b = spacing, (in), per Fig. 10

### B. Sprocket Between Bearings

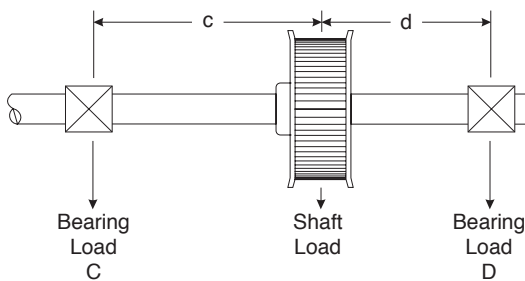


Figure 11

#### Formula 12

$$\text{Load at D (lb)} = \frac{\text{Shaft Load} \times c}{(c + d)}$$

#### Formula 13

$$\text{Load at C (lb)} = \frac{\text{Shaft Load} \times d}{(c + d)}$$

Where: c and d = spacing (in), per Fig. 11

## 14. Self-Generated Tension

All synchronous belt drives exhibit a self-generating or self-tightening characteristic when transmitting a load. Laboratory testing has shown this characteristic to be similar with all tooth profiles. The designer/user should be aware that self-tensioning can result in increased bearing and shaft loads and reduced drive performance; i.e., short belt life. This can be avoided by following proper tensioning procedures.

While belt overtensioning can impose higher bearing and shaft loads and lead to reduced belt life, undertensioning can result in self-tensioning. Properly designed and tensioned drives will not be significantly affected by self-generated tension.

When a belt is too loose for the design load, the self-tensioning characteristic results in the belt teeth climbing out of the sprocket grooves, leading to increased stresses on the belt teeth, accelerated tooth wear and reduced belt life. When a belt is severely undertensioned, this self-tensioning characteristic can result in the belt ratcheting (jumping teeth). When this occurs, significant shaft separation forces are instantaneously developed in the drive, resulting in damage to bearings, shafts, and other drive components including the belt.

**NOTE:** This is true for all synchronous belts.

Maximum drive performance and belt life are achieved when the belt is properly tensioned for the design load and maintained.

## Made-to-order (MTO) Metals & PowerGrip® Belts

In addition to the stock industrial PowerGrip® belts listed in this catalog, Gates offers many special construction, made-to-order belts for use with stock sprockets. The table below lists some of them. Contact Gates for more information.

MTO BELT TYPES	APPLICATION
Alternate tensile member	Special applications: i.e., low rpm, shock loads and precise registration.
Nonstock widths and/or lengths in stock pitches	When exact width or length is required.
High temperature	Dry operation from -40°F to 230°F (-40°C to 110°C)
Oil resistance	For excessively oily conditions, including immersion in commercial motor oil. Temperature range: in oil, -20°F to 240°F (-29°C to 116°C); dry, -20°F to 210°F (-29°C to 99°C)
Static dissipating	Resistance of 6 megohms or less.
Low temperature	Dry temperature operation from -65°F to 180°F (-54°C to 82°C)
Nonmarking backing	For conveyors, food handling, etc., with taste and toxicity subject to customer approval.
PowerPainT™	Paint & Varnish Applications
Precision ground backing	Special applications involving a critical overall belt thickness dimension.
Special thickness rubber backing	For functional and other applications where belt back may require special thickness, durometer or material.
Special tracking	When belt must track in a specific direction.

In addition to the stock industrial PowerGrip® hardware listed in this catalog, Gates offers many additional Made-to-order options. The table below lists some of the available options. For more information, contact the Gates Made-to-order Metals Team at 1-800-709-6001 or via fax at 303-744-4080, or via email at [makemymetal@gates.com](mailto:makemymetal@gates.com).

Made-to-order (MTO) Metals	
Pulleys, Sheaves and Sprockets	All Gates Synchronous Profiles and Pitches, Micro-V® and V-belt, Plain or Profiled Idlers
Bores	Plain, Straight, Tapered, Splined or any special bore. Manufactured to accept Taper-Lock®, Ringfeder®, QD®, Torque Tamer, Trantorque® or other special bushings
Styles	Bar Stock, Idlers, Ringfeder Connections, Torque Tamers, Custom Configurations, Special Hubs and more
Materials	Aluminum, Steel, Ductile Iron, Cast Iron, Phenolic, Stainless Steel or Plastics
Finishes	Hard Coat, Food Grade, Zinc, Black Anodize, Painted, Custom Plating or any special coatings
Processes	Hob Cutting, Shaper Cutting, Die Casting and Molding
Other Services	Sub-Assemblies, Press Bearings, Sprocket/Bushing Balancing and Index Marking

\* Taper-Lock is a trademark of Reliance Electric.

\* Ringfeder is a trademark of Ringfeder Corporation.

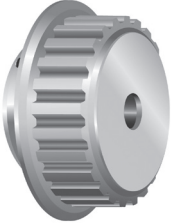
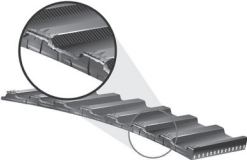
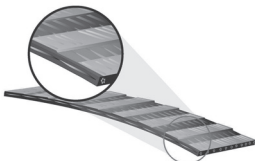
\* Trantorque is a trademark of BTL, a subsidiary of Fenner PLC.

\* QD is a trademark of Emerson Electric.

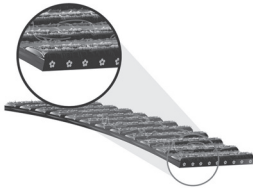
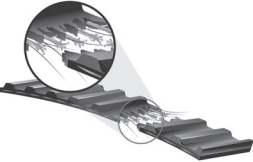
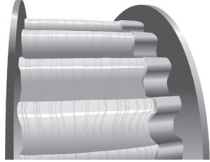
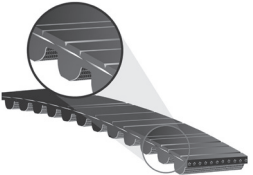
\* Torque Tamer is a trademark of Reliance Electric.



# Troubleshooting

Symptom	Diagnosis	Possible Remedy
Unusual noise	Misaligned drive Too low or high belt tension Backside idler Worn sprocket Bent guide flange Belt speed too high Incorrect belt profile for the sprocket (i.e., GT® etc.) Subminimal diameter Excess load	Correct alignment Adjust tension to recommended value Use inside idler Replace sprocket Replace sprocket/flange Redesign drive Use proper Gates PowerGrip® GT®3 belt/sprocket  Redesign drive using larger diameters Redesign drive for increased capacity
Tension loss	Weak support structure Excessive sprocket wear Fixed (nonadjustable) centers Excessive debris Excessive load Subminimal diameter Belt, sprockets or shafts running too hot  Unusual belt degradation, such as softening or melting	Reinforce the structure Use alternate sprocket material Use inside idler for belt adjustment Protect drive Redesign drive for increased capacity Redesign drive using larger diameters Check for conductive heat transfer from prime mover Reduce ambient drive temperature to 180°F maximum
Belt tracking	Belt running partly off unflanged sprocket Centers exceed 8 times small sprocket diameter and the large sprocket is not flanged. Excessive belt edge wear	Correct alignment Correct parallel alignment to set belt to track on both sprockets  Correct alignment
Flange failure  	Belt forcing flanges off	Correct alignment or properly secure flange to sprocket
Excessive belt edge wear  	Damage due to handling Flange damage Belt too wide Belt tension too low Rough flange surface finish Improper tracking Belt hitting drive guard or bracketry	Follow proper handling instructions Repair flange or replace sprocket Use proper width sprocket Adjust tension to recommended value Replace or repair flange (to eliminate abrasive surface) Correct alignment Remove obstruction or use inside idler
Tooth shear  	Excessive shock loads Less than 6 teeth-in-mesh Extreme sprocket runout Worn sprocket Backside idler Incorrect belt profile for the sprocket (i.e., GT®, etc.) Misaligned drive Belt undertensioned	Redesign drive for increased capacity Redesign drive Replace sprocket Replace sprocket Use inside idler Use proper Gates PowerGrip® GT®3 belt/sprocket  Correct alignment Adjust tension to recommended value

## Troubleshooting

Symptom	Diagnosis	Possible Remedy
<p>Premature tooth wear</p> 	<p>Too low or high belt tension                      Belt running partly off unflanged sprocket                      Misaligned drive                      Incorrect belt profile for the sprocket (i.e., GT®, etc.)                      Worn sprocket                      Rough sprocket teeth                      Damaged sprocket                      Sprocket not to dimensional specification                      Belt hitting drive bracketry or other structure                      Excessive load                      Insufficient hardness of sprocket material                      Excessive debris                      Cocked bushing/sprocket assembly</p>	<p>Adjust tension to recommended value                      Correct alignment                      Correct alignment                      Use proper Gates PowerGrip® GT®3 belt/sprocket</p> <p>Replace sprocket                      Replace sprocket                      Replace sprocket                      Replace sprocket                      Remove obstruction or use inside idler                      Redesign drive for increased capacity                      Use a more wear-resistant material                      Protect belt                      Install bushing per instructions</p>
<p>Tensile break</p> 	<p>Excessive shock load                      Subminimal diameter                      Improper belt handling and storage prior to installation                      Debris or foreign object in drive                      Extreme sprocket runout                      Too low or high belt tension</p>	<p>Redesign drive for increased capacity                      Redesign drive using larger diameters                      Follow proper handling and storage procedures</p> <p>Protect drive                      Replace sprocket                      Adjust tension to recommended level</p>
<p>Unusual sprocket wear</p> 	<p>Sprocket has too little wear resistance (i.e., plastic, aluminum, softer metals)                      Misaligned drive                      Excessive debris                      Excessive load                      Too high, too low belt tension                      Incorrect belt profile (i.e. GT, etc.)</p>	<p>Use alternate sprocket material</p> <p>Correct alignment                      Protect drive                      Redesign drive for increased capacity                      Adjust tension to recommended value                      Use proper Gates PowerGrip GT®3 belt/sprocket</p>
<p>Belt cracking</p> 	<p>Subminimal diameter                      Backside idler                      Extreme low temperature startup                      Extended exposure to harsh chemicals                      Cocked bushing/sprocket assembly</p>	<p>Redesign drive using larger diameters                      Use inside idler                      Preheat drive environment                      Protect drive                      Install bushing per instructions</p>
<p>Excessive temperature                      (belt, bearing, housing, shafts, etc.)</p>	<p>Misaligned drive                      Too low or too high belt tension                      Incorrect belt profile (i.e. GT, etc.)</p>	<p>Correct alignment                      Adjust tension to recommended value                      Use proper Gates PowerGrip GT®3 belt/sprocket</p>
<p>Vibration</p>	<p>Incorrect belt profile for the sprocket (i.e. GT, etc.)                      Too low or too high belt tension                      Bushing or key loose</p>	<p>Use proper Gates PowerGrip GT®3 belt/sprocket</p> <p>Adjust tension to recommended value                      Check and reinstall per instructions</p>

## Standard Calculations

Required	Given	Formula
Speed ratio (R)	Shaft speeds (rpm)	$R = \frac{\text{rpm (faster shaft speed)}}{\text{rpm (slower shaft speed)}}$
	Pulley diameter (D & d)	$R = \frac{D \text{ (larger pulley diameter)}}{d \text{ (smaller pulley diameter)}}$
	Number of pulley grooves (N & n)	$R = \frac{N \text{ (larger pulley groove no. )}}{n \text{ (smaller pulley groove no. )}}$
Horsepower (hp) (33,000 lb-ft/min)	Torque (T) in lb-in Shaft speed (rpm)	$hp = \frac{T \times \text{rpm}}{63,025}$
	Effective tension (Te) in lb. Belt velocity in fpm	$hp = \frac{Te \times V}{33,000}$
Design horsepower (Dhp)	Rated horsepower (hp) Service factor (SF)	$Dhp = hp \times SF$
Power (kw)	Horsepower (hp)	$kw = .7457 \times hp$
Torque (T) in lb-in	Shaft horsepower (hp) Shaft speed (rpm)	$T = \frac{63,025 \times hp}{\text{rpm}}$
	Effective tension (Te) in lbs Pulley radius (R) in inches	$T = Te \times R$
Torque (T) in N-mm	Torque (T) in lb-inches	$T(N - mm) = 112.98 \times T(lb - in)$
Belt velocity in ft/min	Pulley pd in inches Pulley speed in rpm	$V = \frac{pd \times \text{rpm}}{3.82}$
Belt velocity in m/s	Pulley pd in mm Pulley speed in rpm	$V = .0000524 \times pd \times \text{rpm}$
Belt pitch length (PL) in inches (approximate)	Center distance (C) in inches Pulley diameters (D & d) in inches	$PL = 2C + [1.57 \times (D + d)] + \frac{(D - d)^2}{4C}$
Arc of contact on smaller pulley (A/Cs)	Pulley diameters (D & d) in inches Center distance (C) in inches	$A/Cs = 180 - \left[ \frac{(D - d) \times 60}{4C} \right]$
Torque (T) due to flywheel effect (WR <sup>2</sup> ) in lb-inches (accel. and/or decel.)	Final speed (RPM) Initial speed (rpm) Flywheel effect (WR <sup>2</sup> ) in lbs-ft <sup>2</sup> Time (t) in seconds	$T = \frac{.039 \times (RPM - \text{rpm}) \times WR^2}{t}$
Flywheel effect (WR <sup>2</sup> ) in lb-ft <sup>2</sup>	Face width of rim (F) in inches Material density (Z) in lbs/in <sup>3</sup> Outside rim diameter (D) in inches Inside rim diameter (d) in inches	$WR_2 = \frac{F \times Z \times (D^4 - d^4)}{1467}$

## *Power Transmission Conversions*

### FORCE CONVERSION CONSTANTS

**Metric to U.S.**

Newtons x 3.5969 = Ouncesf  
 Newtons x 0.2248 = Poundsf  
 Kilogramsf x 2.2046 = Poundsf

**U.S. to Metric**

Ouncesf x 0.2780 = Newtons  
 Poundsf x 4.4482 = Newtons  
 Poundsf x 0.4536 = Kilogramsf

**Metric to Metric**

Kilogramsf x 9.8067 = Newtons  
 Newtons x 0.1020 = Kilogramsf

### TORQUE CONVERSION CONSTANTS

**Metric to U.S.**

Newton Meters x 141.6119 = Ouncef Inches  
 Newton Meters x 8.8508 = Poundf Inches  
 Newton Meters x 0.7376 = Poundf Feet

**U.S. to Metric**

Ouncef Inches x 0.0071 = Newton Meters  
 Poundf Inches x 0.1130 = Newton Meters  
 Poundf Feet x 1.3558 = Newton Meters

**Metric to Metric**

Newton Meters x 10.1972 = Kilogramf Centimeters  
 Kilogramf Centimeters x 0.0981 = Newton Meters  
 Newton Meters x 0.1020 = Kilogramf Meters  
 Kilogramf Meters x 9.8067 = Newton Meters

### POWER CONVERSION CONSTANTS

**Metric to U.S.**

Kilowatt x 1.3410 = Horsepower  
 Watt x 0.0013 = Horsepower

**U.S. to Metric**

Horsepower x 745.6999 = Watt  
 Horsepower x 0.7457 = Kilowatt

### VELOCITY CONVERSION CONSTANTS

**Metric to U.S.**

Meters per Second x 196.8504 = Feet per Minute

**U.S. to Metric**

Feet per Minute x 0.0057 = Meters per Second

**Metric to Metric**

Meters per Second x 3.6000 = Kilometers per Hour

### LINEAR BELT SPEED CONVERSION CONSTANTS

**Metric to U.S.**

Meters per second x 196.8504 = Feet per Minute

**U.S. to Metric**

Feet per Minute x 0.005080 = Meters per Second  
 Square Miles x 2.5900 = Square Kilometers

**U.S. to U.S.**

Feet per Second x 60.00 = Feet per Minute  
 Feet per Minute x 0.0167 = Feet per Second

## *Other Conversions*

### LENGTH CONVERSION CONSTANTS

**Metric to U.S.**

Millimeters x 0.0394 = Inches  
 Meters x 39.3701 = Inches  
 Meters x 3.2808 = Feet  
 Meters x 1.0936 = Yards  
 Kilometers x 3280.84 = Feet  
 Kilometers x 0.6214 = Statute Miles  
 Kilometers x 0.5396 = Nautical Miles

**U.S. to Metric**

Inches x 25.4000 = Millimeters  
 Inches x 0.0254 = Meters  
 Feet x 0.3048 = Meters  
 Yards x 0.9144 = Meters  
 Feet x 0.0003048 = Kilometers  
 Statute Miles x 1.6093 = Kilometers  
 Nautical Miles x 1.8532 = Kilometers

### AREA CONVERSION CONSTANTS

**Metric to U.S.**

Square Millimeters x 0.0016 = Square Inches  
 Square Centimeters x 0.1550 = Square Inches  
 Square Meters x 10.7639 = Square Feet  
 Square Meters x 1.1960 = Square Yards  
 Hectares x 2.4711 = Acres  
 Square Kilometers x 247.105 = Acres  
 Square Kilometers x 0.3861 = Square Miles

**U.S. to Metric**

Square Inches x 645.160 = Square Millimeters  
 Square Inches x 6.4516 = Square Centimeters  
 Square Feet x 0.0929 = Square Meters  
 Square Yards x 0.8361 = Square Meters  
 Acres x 0.4047 = Hectares  
 Acres x 0.004047 = Square Kilometers  
 Square Miles x 2.5900 = Square Kilometers

# Useful Formulas and Calculations

## Other Conversions — continued

### WEIGHT CONVERSION CONSTANTS

**Metric to U.S.**

Grams x 15.4324 = Grains  
 Grams x 0.0353 = Ounces (Avd.)  
 Grams x 0.0338 = Fluid Ounces (water)  
 Kilograms x 35.2740 = Ounces (Avd.)  
 Kilograms x 2.2046 = Pounds (Avd.)  
 Metric Tons (1000 Kg) x 1.1023 = Net Ton (2000 lbs.)  
 Metric Tons (1000 Kg) x 0.9842 = Gross Ton (2240 lbs.)

**U.S. to Metric**

Grains x 0.0648 = Grams  
 Ounces (Avd.) x 28.3495 = Grams  
 Fluid Ounces (water) x 29.5735 = Grams  
 Ounces (Avd.) x 0.0283 = Kilograms  
 Pounds (Avd.) x 0.4536 = Kilograms  
 Net Ton (2000 lbs.) x 0.9072 = Metric Tons (1000 Kg)  
 Gross Ton (2240 lbs.) x 1.0160 = Metric Tons (1000 Kg)

### DECIMAL AND MILLIMETER EQUIVALENTS OF FRACTIONS

Inches		Millimeters	Inches		Millimeters
Fractions	Decimals		Fractions	Decimals	
1/64	.015625	.397	33/64	.515625	13.097
1/32	.03125	.794	17/32	.53125	13.494
3/64	.046875	1.191	35/64	.546875	13.891
1/16	.0625	1.588	9/16	.5625	14.288
5/64	.078125	1.984	37/64	.578125	14.684
3/32	.09375	2.381	19/32	.59375	15.081
7/64	.109375	2.778	39/64	.609375	15.478
1/8	.125	3.175	5/8	.625	15.875
9/64	.140625	3.572	41/64	.640625	16.272
5/32	.15625	3.969	21/32	.65625	16.669
11/64	.171875	4.366	43/64	.671875	17.066
3/16	.1875	4.763	11/16	.6875	17.463
13/64	.203125	5.159	45/64	.703125	17.859
7/32	.21875	5.556	23/32	.71875	18.256
15/64	.234375	5.953	47/64	.734375	18.653
1/4	.250	6.350	3/4	.750	19.050
17/64	.265625	6.747	49/64	.765625	19.447
9/32	.28125	7.144	25/32	.78125	19.844
19/64	.296875	7.541	51/64	.796875	20.241
5/16	.3125	7.938	13/16	.8125	20.638
21/64	.328125	8.334	53/64	.828125	21.034
11/32	.34375	8.731	27/32	.84375	21.431
23/64	.359375	9.128	55/64	.859375	21.828
3/8	.375	9.525	7/8	.875	22.225
25/64	.390625	9.922	57/64	.890625	22.622
13/32	.40625	10.319	29/32	.90625	23.019
27/64	.421875	10.716	59/64	.921875	23.416
7/16	.4375	11.113	15/16	.9375	23.813
29/64	.453125	11.509	61/64	.953125	24.209
15/32	.46875	11.906	31/32	.96875	24.606
31/64	.484375	12.303	63/64	.984375	25.003
1/2	.500	12.700	1	1.000	25.400

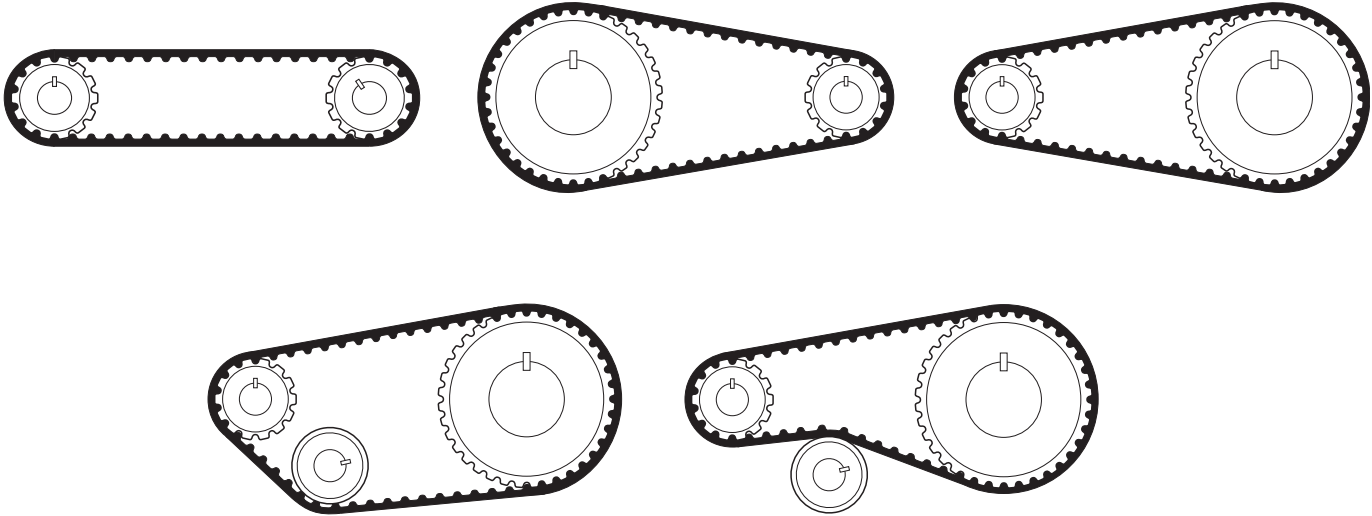




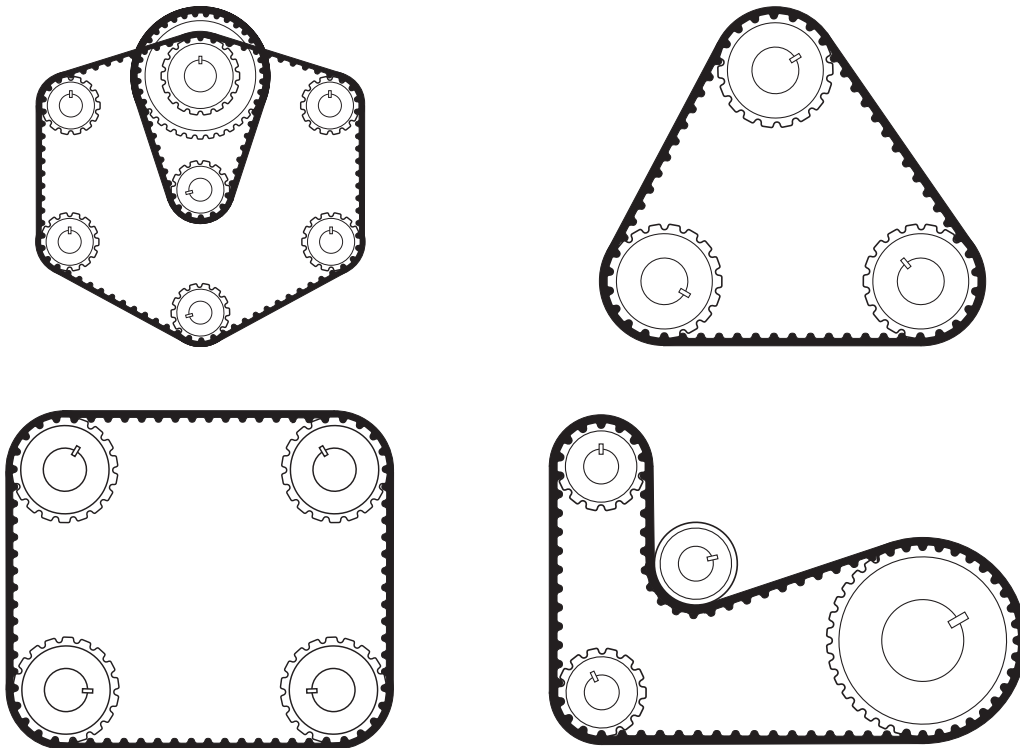
## Application Examples

The following illustrations show a few of the many ways that PowerGrip® belt drives can be used to transmit both power and motion. Synchronous belt drive systems are amazingly versatile, yet reliable and efficient. The examples that follow utilize conventional endless, Long-Length and Twin Power® belting, all of which is readily available.

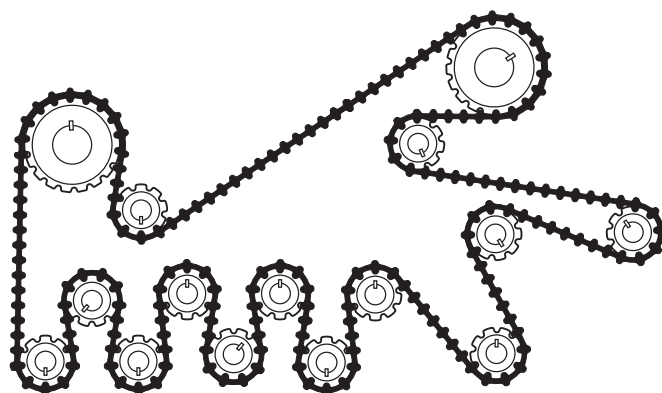
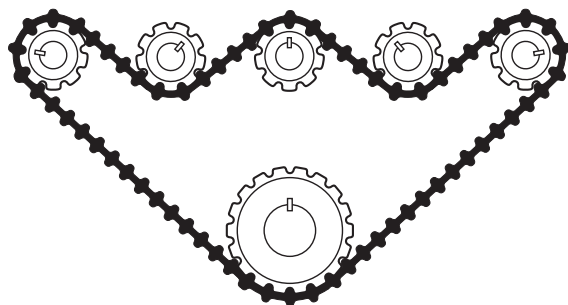
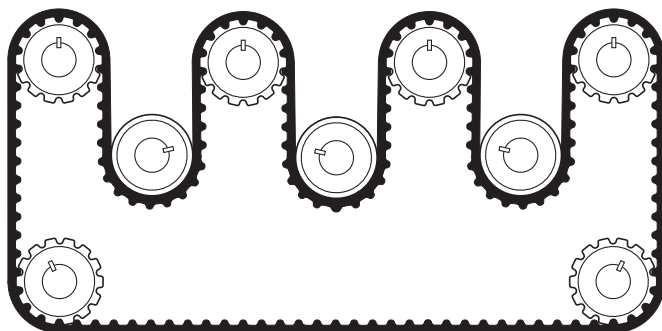
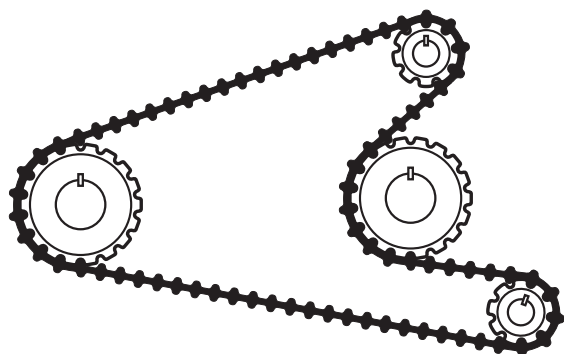
### *Common Drive Configurations*



### *Multiple Shaft Drive Configurations*

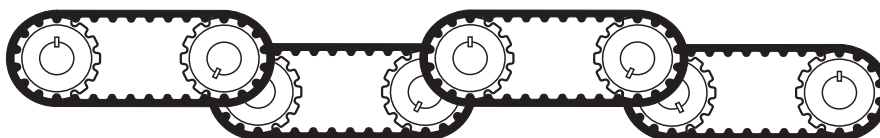
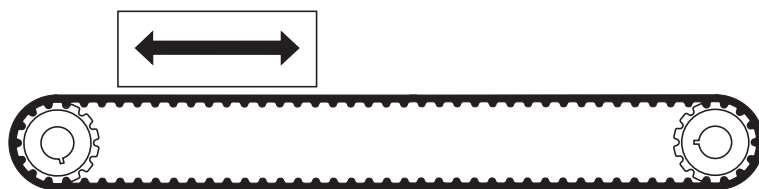
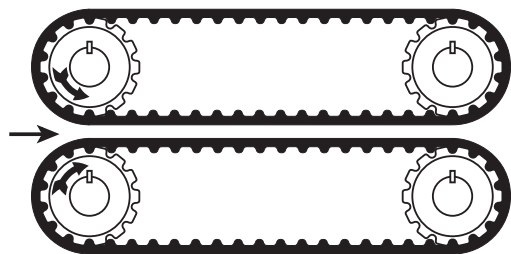


*Serpentine Drive Configurations*

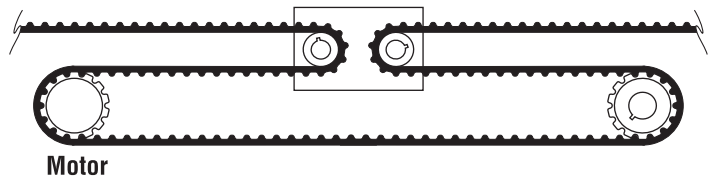
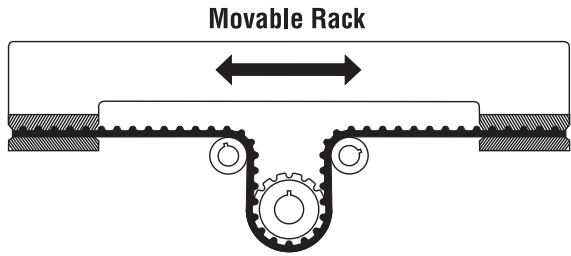
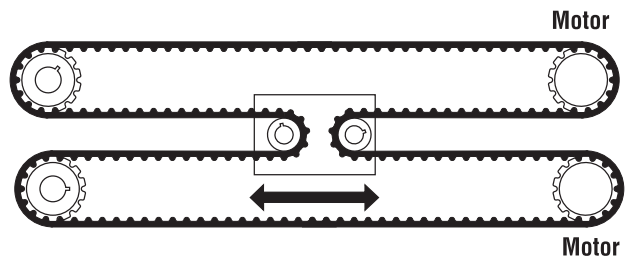
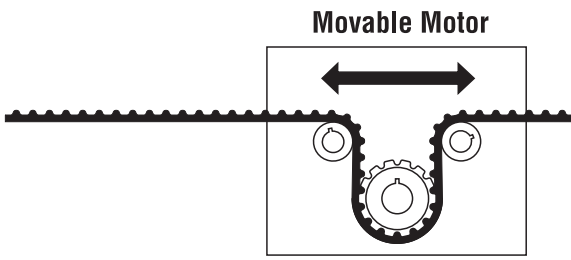


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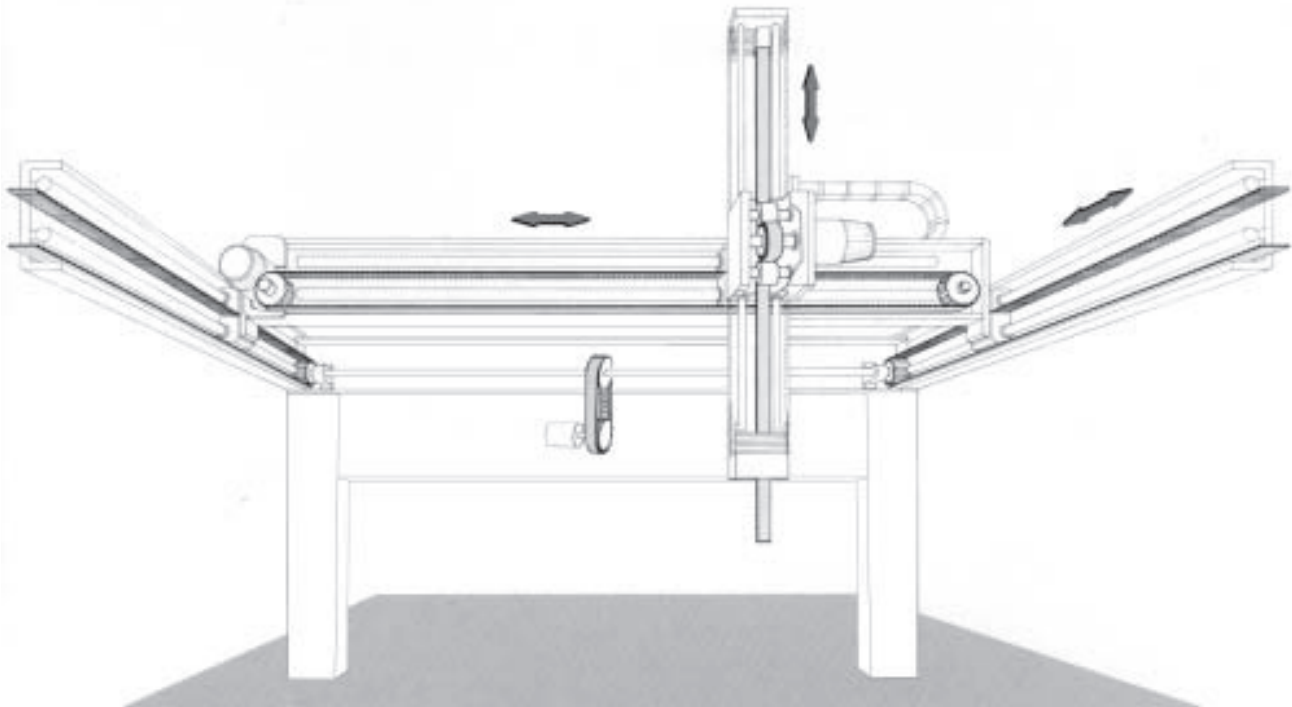
*Conveying and Material Transport Applications*



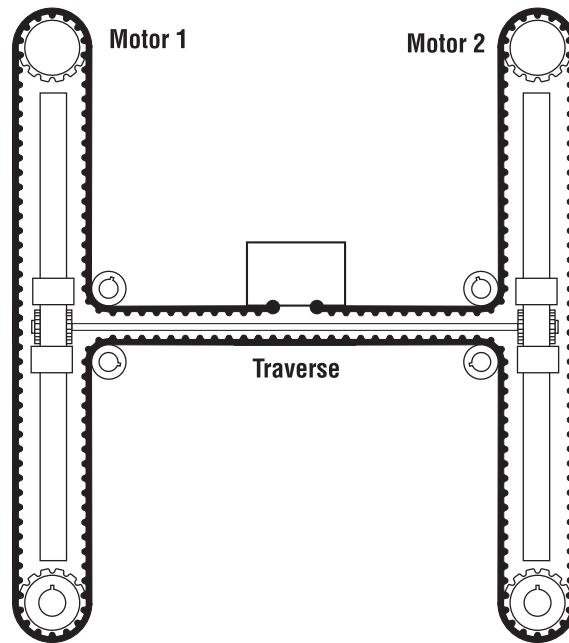
*Rack and Carriage Drive Configurations*



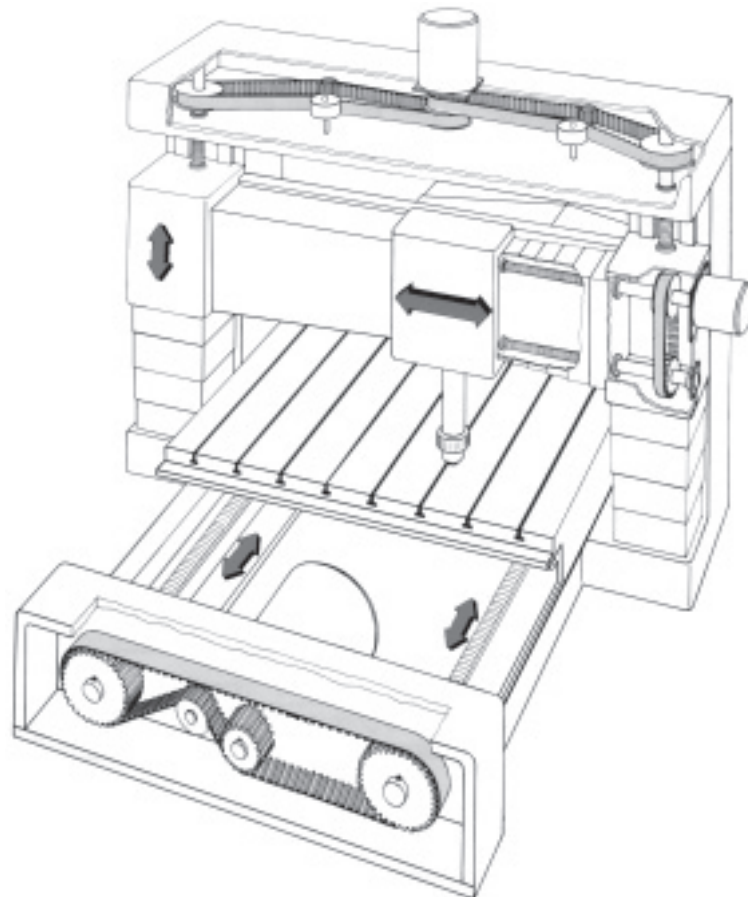
*Long Length Drive Applications*



*Complex Carriage Drive Configuration*



*Lead Screw Drive Applications*







**POWERING PROGRESS™**

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