ALTRA INDUSTRIAL MOTION

Synchronous Drives

TB Wood's Incorporated

An Altra Industrial Motion Company

TB Wood's

SECTION
C1

SYNCHRONOUS SPROCKETS & BELTS

FEATURES OF SYNCHRONOUS BELT DRIVES

Positive Slip-Proof Engagement

Because the teeth of the Synchronous Belt mesh with sprocket grooves, there is no creepage to cause speed variations. Powerful tensile cords can't stretch, so take-up is eliminated from drive maintenance. Precision is guaranteed. This feature is especially important in printing, packaging and material-handling where synchronization is a necessity. Because of this, Synchronous Drives have replaced gears and silent chain in these and many similar applications.

Wide Speed Range

Drives, such as chains perform best within a limited range of speeds. With Synchronous Drives, the speed range is more than doubled. This feature is of special importance when the entire speed range is developed from a single drive such as in DC drives or machine tool applications. Synchronous Belt efficiency remains high throughout the entire speed range.

Constant Driven Speeds

The unique Synchronous tooth configuration engages and clears each sprocket groove in a continuous flow of quiet, smoothly transmitted power. Thus, angular velocity of the driven sprocket is constant. There is no jerking or vibration caused by chordal rise and fall of the pitch line as occurs in chain drives. There is no loss of speed caused by belt creep or slippage as with flat and V-belts. The Synchronous Drive's constant output speed is a definite advantage in precision work such as in high-speed printers and machine tools like indexers, drill presses and boring mills.

Wide Range of Load Capacities

Load capacities of stock Synchronous Drives range from fractional to hundreds of horsepower. Torque loads range from thousands of foot-pounds to inch-ounces. The high efficiencies offered by Synchronous Drives make them ideal for many purposes.

No Lubrication

Unlike chain or gear drives, Synchronous Drives never need lubrication, since there is no metal-to-metal contact. Maintenance costs are cut to a minimum. Contamination from oil drip, spatter, splash or spray mist is eliminated, too. In addition, there is no oil or grease to trap dirt, grit or abrasive particles and accelerate wear. Food processors, grain elevator operators and other contamination-sensitive industries benefit especially from this feature.

High Tension Eliminated

Unlike flat and V-belts, Synchronous Belts do not rely on friction for their pulling power. Slack-side tension is practically zero, and tight-side tension is reduced. As a result, overhung bearing loads are lessened with resultant improvements in motor and bearing life.

High Mechanical Efficiency

Synchronous Drives have unusually high mechanical efficiency. Futhermore, transmission efficiency is not lost with use. The belt construction insures very little heat build-up since friction is not required to pull the load. In addition, belt tension is reduced. Significant power savings are thus obtainable, particularly when using Synchronous Belts on larger horsepower installations.

Economical Operation

The overall cost of Synchronous Drives can be lower than those of other drives. Original equipment costs are reduced by eliminating adjustable motor bases, lubricating systems and tensioning devices. Maintenance is simpler. No adjustments are needed due to stretch or wear. These savings are not confined to newly designed drives alone, because most roller chain drives can be converted to Wood's Synchronous Drives. Synchronous Belts are also ideal for areas where proper maintenance is difficult or where downtime could prove to be extremely expensive.

SYNCHRONOUS 'QD' SPROCKET DIMENSIONS

8M

TB Wood's

PRODUCT NO.	BUSH-ING	NO. OF TEETH	DIAMETERS				TYPE	DIMENSIONS (INCHES)				BORE		WT.
			P.D.	O.D.		I.D.		E	K	L	M	Min.	Max.	
				Sprocket	Flange									
FOR BELTS 30mm (1.18 in.) WIDE • 8mm PITCH (8M-30) Face Width (F) = 1-1/2 Dual Drilled (inch/metric) ①														
P228M30	. . .	22	2.206	2.152	2.56	. . .	MPB1F	5/8	1 5/8	2 1/8	0	* 1/2	1 3/16	1.5
P248M30	JA	24	2.406	2.352	2.76	1.34	E1F	31/32	0	1	15/32	1/2	1 1/4	.8
P268M30	JA	26	2.607	2.553	2.95	1.88	E1F	31/32	0	1	15/32	1/2	1 1/4	.9
P288M30	QT	28	2.807	2.759	3.15	1.57	E1F	5/8	0	1 1/4	3/8	1/2	1 1/2	1.8
P308M30	QT	30	3.008	2.958	3.35	1.57	E1F	5/8	0	1 1/4	3/8	1/2	1 1/2	2.2
P328M30	QT	32	3.208	3.156	3.54	2.56	B1F	1/4	5/8	1 1/4	0	1/2	1 1/2	2.0
P348M30	SH	34	3.409	3.355	3.82	2.75	A1F	1/8	11/16	1 1/4	1/8	1/2	1 11/16	2.3
P368M30	SH	36	3.609	3.555	3.94	2.82	A1F	1/8	11/16	1 1/4	1/8	1/2	1 11/16	2.7
P388M30	SH	38	3.810	3.756	4.13	3.00	A1F	1/8	11/16	1 1/4	1/8	1/2	1 11/16	3.0
P408M30	SH	40	4.010	3.956	4.33	3.00	A1F	1/8	11/16	1 1/4	1/8	1/2	1 11/16	3.3
P448M30	SDS	44	4.411	4.357	4.76	3.50	A1F	1/8	3/4	1 5/16	1/16	1/2	2	3.8
P488M30	SDS	48	4.812	4.758	5.16	3.80	A1F	1/8	3/4	1 5/16	1/16	1/2	2	4.5
P568M30	SDS	56	5.614	5.560	5.95	4.60	A1F	1/8	3/4	1 5/16	1/16	1/2	2	5.9
P648M30	SK	64	6.416	6.362	6.77	5.40	D1F	15/32	1/4	1 7/8	3/32	1/2	2 5/8	10.4
P728M30	SK	72	7.218	7.164	7.60	6.20	D2F	15/32	1/4	1 7/8	3/32	1/2	2 5/8	10.7
P808M30	SK	80	8.020	7.966	8.39	6.90	D2F	15/32	1/4	1 7/8	3/32	1/2	2 5/8	11.8
P908M30	SK	90	9.023	8.969	. . .	7.90	D2	15/32	1/4	1 7/8	3/32	1/2	2 5/8	13.5
P1128M30	SK	112	11.229	11.175	. . .	10.00	D3	15/32	1/4	1 7/8	3/32	1/2	2 5/8	16.3
FOR BELTS 50mm (1.97 in.) WIDE • 8mm PITCH (8M-50) Face Width (F) = 2-3/8 Dual Drilled (inch/metric) ①														
P288M50	. . .	28	2.807	2.759	3.15	. . .	MPB1F	3/4	2 9/32	3 1/8	0	* 3/4	1 3/8	3.7
P308M50*	. . .	30	3.008	2.958	3.35	. . .	MPB1F	3/4	2 15/32	3 1/8	0	* 3/4	1 3/8	4.3
P328M50*	. . .	32	3.208	3.156	3.54	. . .	MPB1F	3/4	2 11/16	3 1/8	0	* 1/2	1 1/2	5.3
P348M50	SH	34	3.409	3.355	3.82	2.75	D1F	1/16	1/2	1 1/4	1 3/16	1/2	1 11/16	2.7
P368M50	SH	36	3.609	3.555	3.94	2.82	D1F	1/16	1/2	1 1/4	1 3/16	1/2	1 11/16	3.4
P388M50	SH	38	3.810	3.756	4.13	3.00	D1F	1/16	1/2	1 1/4	1 3/16	1/2	1 11/16	3.7
P408M50	SH	40	4.010	3.956	4.33	3.00	D1F	1/16	1/2	1 1/4	1 3/16	1/2	1 11/16	4.2
P448M50	SD	44	4.411	4.357	4.76	3.50	D1F	1/16	9/16	1 13/16	5/8	1/2	2	5.7
P488M50	SD	48	4.812	4.758	5.16	3.80	D1F	1/16	9/16	1 13/16	5/8	1/2	2	6.9
P568M50	SK	56	5.614	5.560	5.95	4.60	D1F	5/32	9/16	1 7/8	21/32	1/2	2 5/8	9.4
P648M50	SK	64	6.416	6.362	6.77	5.40	D1F	5/32	9/16	1 7/8	21/32	1/2	2 5/8	12.0
P728M50	SK	72	7.218	7.164	7.60	6.20	D1F	5/32	9/16	1 7/8	21/32	1/2	2 5/8	15.0
P808M50	SF	80	8.020	7.966	8.39	6.90	D2F	1/8	9/16	2	1/2	1/2	2 15/16	17.0
P908M50	SF	90	9.023	8.969	. . .	7.90	D2	1/8	9/16	2	1/2	1/2	2 15/16	19.1
P1128M50	SF	112	11.229	11.175	. . .	10.00	D3	1/8	9/16	2	1/2	1/2	2 15/16	23.9
P1448M50	E	144	14.437	14.383	. . .	13.20	D3	17/32	3/8	2 5/8	9/32	7/8	3 1/2	38.1
P1928M50	E	192	19.249	19.195	. . .	18.00	D3	17/32	3/8	2 5/8	9/32	7/8	3 1/2	52.5
FOR BELTS 85mm (3.35 in.) WIDE • 8mm PITCH (8M-85) Face Width (F) = 3-3/4 Dual Drilled (inch/metric) ①														
P348M85*	. . .	34	3.409	3.355	3.82	. . .	MPB1F	3/4	2 15/16	4 1/2	0	* 7/8	1 3/4	8.4
P368M85	SKL	36	3.609	3.555	3.94	2.88	L1F	1 25/32	. . .	1 1/4	1 31/32	1/2	1 15/16	4.6
P388M85	SKL	38	3.810	3.756	4.13	3.00	L1F	1 25/32	. . .	1 1/4	1 31/32	1/2	1 15/16	5.4
P408M85	SKL	40	4.010	3.956	4.33	3.00	L1F	1 25/32	. . .	1 1/4	1 31/32	1/2	1 15/16	6.0
P448M85	SFL	44	4.411	4.357	4.76	3.50	L1F	1 25/32	. . .	1 1/4	1 31/32	1/2	2 3/8	7.5
P488M85	SFL	48	4.812	4.758	5.16	3.63	L1F	1 25/32	. . .	1 1/4	1 31/32	1/2	2 3/8	9.5
P568M85	EL	56	5.614	5.560	5.95	4.56	L1F	1 3/8	. . .	1 5/8	2 3/8	7/8	2 7/8	13.5
P648M85	SF	64	6.416	6.362	6.77	5.38	A1F	9/16	1 1/4	2	1 3/16	1/2	2 15/16	15.6
P728M85	E	72	7.218	7.164	7.60	6.19	A1F	5/32	1 1/16	2 5/8	31/32	7/8	3 1/2	24.0
P808M85	E	80	8.020	7.966	8.39	6.88	A1F	5/32	1 1/16	2 5/8	31/32	7/8	3 1/2	29.1
P908M85	E	90	9.023	8.969	. . .	7.88	A1	7/32	1 1/16	2 5/8	31/32	7/8	3 1/2	35.5
P1128M85	F	112	11.229	11.175	. . .	10.00	D1	7/16	5/8	3 5/8	9/16	1	4	70.5
P1448M85	F	144	14.437	14.383	. . .	13.19	B3	7/16	5/8	3 5/8	9/16	1	4	64.5
P1928M85	F	192	19.249	19.195	. . .	18.00	D3	7/16	5/8	3 5/8	9/16	1	4	78.1

Weights for all Sure-Grip bushed items are approximate and include the bushing.

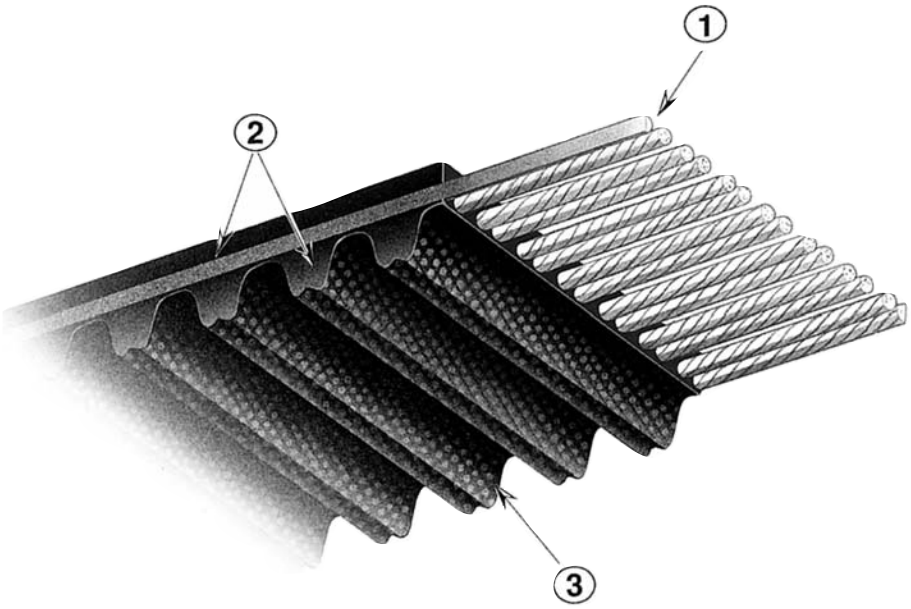
* Bored-To-Suit construction, minimum plain bore with 2 setscrews.

TB Wood's

SYNCHRONOUS PLUS
FEATURES AND BENEFITS

1. FIBERGLASS TENSION MEMBER

FEATURE	BENEFIT
Excellent Dimensional Stability	Less Maintenance
No Stretch Under Load	Retensioning Generally not Required
Allows for Small Pulley and Short Center Drives	Economical Designs



2. MOLDED TEETH & BACKING

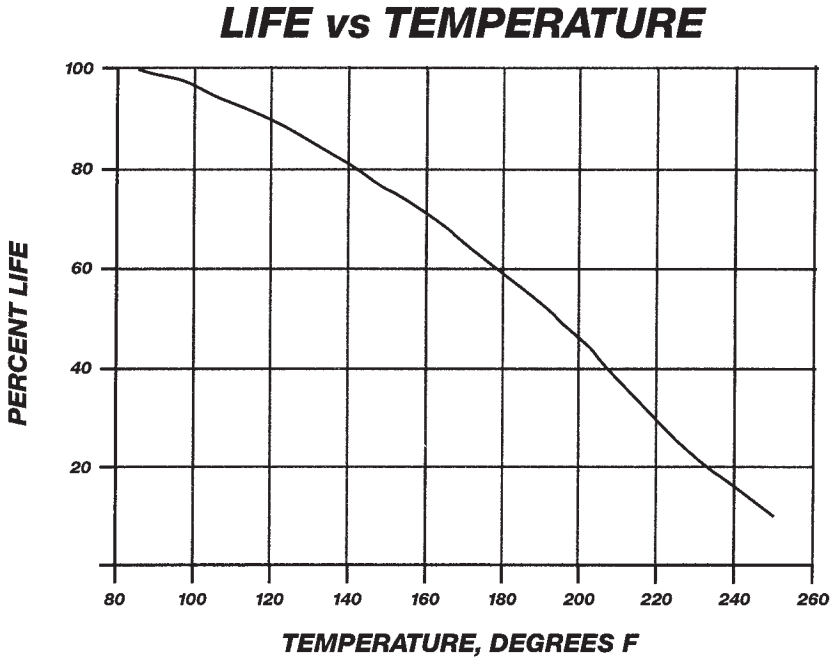
FEATURE	BENEFIT
Resists Damaging Environmental Factors	Longer Belt Life
Outstanding Bending Characteristics	Smooth Belt Operation
Superior Molding Characteristics	Smooth Surface Reduces Vibration

3. IMPREGNATED NYLON WEAR JACKET

FEATURE	BENEFIT
Durable Tooth Protection	Extends Belt Life
Minimal Drag/ Reduces Friction	Smooth Precise Operation

Synchronous Plus belts are capable of operating at temperatures of -30˚F with no adverse effects.

Any time a belt is used in an elevated ambient temperature, the expected life will decrease. The relationship between ambient temperatures and belt life is shown in the chart below. As an example, at a temperature of 180˚F, we would expect life to be 60% of the life that would be obtained at 85˚F.



TOLERANCES ON BELT LENGTH

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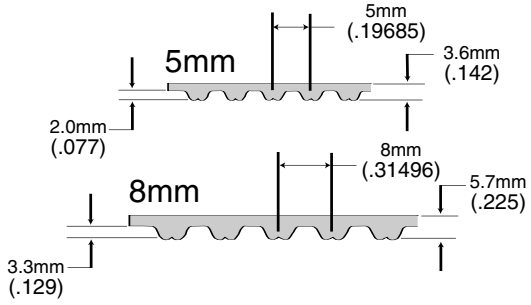
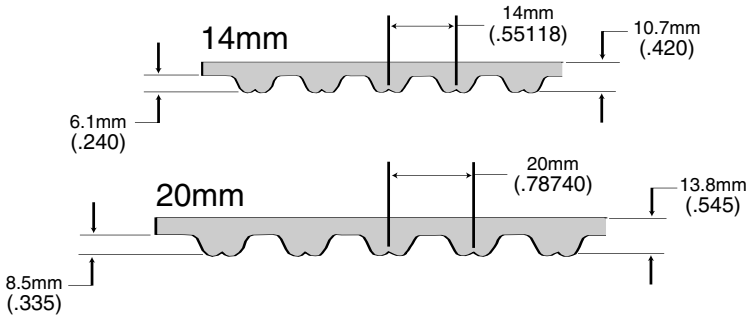
Belt Length (mm)	*Std. Length Tolerances (Center-to-Center)	Belt Length (mm)	*Std. Length Tolerances (Center-to-Center)
Over 254 to 381	±0.23	Over 3302 to 3556	±0.61
Over 381 to 508	±0.25	Over 3556 to 3810	±0.64
Over 508 to 762	±0.30	Over 3810 to 4064	±0.66
Over 762 to 1016	±0.33	Over 4064 to 4318	±0.69
Over 1016 to 1270	±0.38	Over 4318 to 4572	±0.71
Over 1270 to 1524	±0.41	Over 4572 to 4826	±0.74
Over 1524 to 1778	±0.43	Over 4826 to 5080	±0.76
Over 1778 to 2032	±0.46	Over 5080 to 5534	±0.79
Over 2032 to 2286	±0.48	Over 5534 to 5588	±0.81
Over 2286 to 2540	±0.51	Over 5588 to 5842	±0.84
Over 2540 to 2794	±0.53	Over 5842 to 6096	±0.86
Over 2794 to 3048	±0.56	Over 6096 to 6350	±0.89
Over 3048 to 3302	±0.58	Over 6350 to 6604	±0.91
		Over 6604 to 6860	±0.94

*NOTE: The length tolerances given for positive drive belts refer to the center to center tolerance between belts when checked on a standard measuring fixture. The actual pitch length tolerance is twice the value shown. If a special tension member is used, consult the factory for proper length tolerances.

BELT DIMENSIONS





Center Distance Installation and Take-up Allowance

	Decrease in Center Distance for Installation		
Pitch Length	> 1525mm	1525-3050mm	<3050mm
5M Both Flanged	-0.8	-0.9	–
5M One Flanged	-0.6	-0.7	–
8M Both Flanged	-1.4	-1.5	-1.6
8M One Flanged	-0.9	-1.0	-1.1
14M Both Flanged	-2.3	-2.4	-2.5
14M One Flanged	-1.4	-1.5	-1.6
20M Both Flanged	–	-3.2	-3.3
20M One Flanged	–	-2.0	-2.1
	Take-up in Center Distance for Installation		
(All Pitches)	+0.1	+0.2	+0.3

SYNCHRONOUS PLUS BELTS

5MM Pitch Belts

Belt Length & Pitch Code	Pitch Length		No. of Teeth	Width Code† 15 .59	25 .98
	in.	mm		Approx Wt. (lbs.)	
350-5M	13.78	350	70	.05	.09
375-5M	14.76	375	75	.06	.09
400-5M	15.75	400	80	.06	.10
425-5M	16.73	425	85	.06	.10
450-5M	17.72	450	90	.07	.11
475-5M	18.70	475	95	.07	.12
500-5M	19.69	500	100	.07	.12
535-5M	21.06	535	107	.08	.13
565-5M	22.24	565	113	.08	.14
600-5M	23.62	600	120	.09	.15
635-5M	25.00	635	127	.09	.16
670-5M	26.38	670	134	.10	.16
710-5M	27.95	710	142	.10	.17
740-5M	29.13	740	148	.11	.18
800-5M	31.50	800	160	.12	.20
835-5M	32.87	835	167	.12	.20
850-5M	33.46	850	170	.12	.20
890-5M	35.04	890	178	.12	.21
950-5M	37.40	950	190	.14	.23
1000-5M	39.37	1000	200	.15	.24
1050-5M	41.34	1050	210	.15	.26
1125-5M	44.29	1125	225	.16	.27
1195-5M	47.05	1195	239	.17	.28
1270-5M	50.00	1270	254	.19	.31
1420-5M	55.91	1420	284	.21	.34
1595-5M	62.80	1595	319	.23	.39
1690-5M	66.54	1690	338	.24	.41
1790-5M	70.47	1790	358	.26	.43
1895-5M	74.61	1895	379	.28	.46
2000-5M	78.74	2000	400	.28	.47
2250-5M	88.58	2250	450	.30	.50
2525-5M	99.41	2525	505	.32	.53

8MM Pitch Belts

Belt Length & Pitch Code	Pitch Length		No. of Teeth	Width Code† 20 .79	30 1.18	50 1.97	85 3.35
	in.	mm		Approx Wt. (lbs.)			
480-8M	18.90	480	60	.13	.20	.34	.57
536-8M	21.10	536	67	.15	.22	.37	.64
560-8M	22.05	560	70	.16	.23	.39	.66
600-8M	23.62	600	75	.17	.25	.42	.71
640-8M	25.20	640	80	.18	.27	.45	.76
720-8M	28.35	720	90	.20	.30	.50	.85
800-8M	31.50	800	100	.22	.33	.56	.95
880-8M	34.65	880	110	.25	.37	.61	1.04
960-8M	37.80	960	120	.27	.40	.67	1.14
1040-8M	40.94	1040	130	.29	.43	.74	1.23
1120-8M	44.09	1120	140	.31	.47	.78	1.33
1200-8M	47.24	1200	150	.34	.50	.84	1.42
1224-8M	48.19	1224	153	.35	.51	.85	1.43
1280-8M	50.39	1280	160	.36	.53	.89	1.52
1440-8M	56.69	1440	180	.40	.60	1.01	1.71
1600-8M	62.99	1600	200	.45	.67	1.11	1.90
1760-8M	69.29	1760	220	.49	.73	1.23	2.08
1800-8M	70.87	1800	225	.50	.75	1.25	2.13
2000-8M	78.74	2000	250	.56	.83	1.39	2.37
2200-8M	86.61	2200	275	.62	.92	1.53	2.61
2400-8M	94.49	2400	300	.67	1.00	1.67	2.84
2600-8M	102.36	2600	325	.73	1.09	1.81	3.08
2800-8M	110.24	2800	350	.78	1.17	1.95	3.32
3048-8M	120.00	3048	381	.86	1.28	2.12	3.60
3280-8M	129.13	3280	410	.90	1.34	2.22	3.80
3600-8M	141.73	3600	450	1.00	1.50	2.50	4.26
4400-8M	173.23	4400	550	1.20	1.80	3.00	5.02

14MM Pitch Belts

Belt Length & Pitch Code	Pitch Length		No. of Teeth	Width Code† 40 1.57	55 2.17	85 3.35	115 4.53	170 6.69
	in.	mm		Approx Wt. (lbs.)				
966-14M	38.03	966	69	.84	1.15	1.78	2.41	3.56
1190-14M	46.85	1190	85	1.03	1.42	2.20	2.98	4.39
1400-14M	55.12	1400	100	1.21	1.67	2.58	3.50	5.16
1610-14M	63.39	1610	115	1.40	1.92	2.97	4.02	5.95
1778-14M	70.00	1778	127	1.54	2.13	3.28	4.45	6.56
1890-14M	74.41	1890	135	1.64	2.26	3.49	4.73	6.97
2100-14M	82.68	2100	150	1.82	2.51	3.88	5.25	7.75
2310-14M	90.94	2310	165	2.00	2.76	4.26	5.77	8.53
2450-14M	96.46	2450	175	2.13	2.93	4.52	6.13	9.04
2590-14M	101.97	2590	185	2.25	3.10	4.78	6.47	9.55
2800-14M	110.24	2800	200	2.43	3.34	5.17	7.00	10.33
3150-14M	124.02	3150	225	2.73	3.77	5.82	7.87	11.62
3360-14M	132.28	3360	240	2.58	3.98	6.14	8.31	12.26
3500-14M	137.80	3500	250	3.03	4.19	6.46	8.75	12.90
3850-14M	151.58	3850	275	3.33	4.60	7.10	9.62	14.20
4326-14M	170.32	4326	309	3.74	5.17	8.00	10.80	15.96
4578-14M	180.24	4578	327	3.96	5.48	8.45	11.42	16.90
4956-14M	195.12	4956	354	4.29	5.93	9.15	12.36	18.30
5320-14M	209.45	5320	380	4.60	6.37	9.82	13.27	19.64
5740-14M	225.98	5740	410	4.97	6.83	10.55	14.29	21.12
6160-14M	242.52	6160	440	5.33	7.33	11.32	15.34	22.67
6860-14M	270.08	6860	490	5.94	8.16	12.61	17.08	25.25

20MM Pitch Belts

Belt Length & Pitch Code	Pitch Length		No. of Teeth	Width Code† 115 4.53	170 6.69	230 9.06	290 11.42	340 13.39
	in.	mm		Approx Wt. (lbs.)				
2000-20M	78.74	2000	100	6.0	9.0	12.0	16.0	19.0
2500-20M	98.43	2500	125	8.0	11.0	15.0	20.0	24.0
3400-20M	133.85	3400	170	11.0	16.0	22.0	27.0	32.0
3800-20M	149.60	3800	190	12.0	18.0	24.5	30.5	35.5
4200-20M	165.35	4200	210	13.0	20.0	27.0	34.0	39.0
4600-20M	181.10	4600	230	14.5	21.5	29.5	37.0	43.0
5000-20M	196.85	5000	250	16.0	23.0	32.0	40.0	47.0
5400-20M	212.60	5400	270	17.0	25.0	34.0	43.0	51.0
5800-20M	228.35	5800	290	18.0	27.0	37.0	46.0	54.0
6200-20M	244.09	6200	310	20.0	29.0	39.0	50.0	58.0
6600-20M	259.84	6600	330	21.0	31.0	42.0	53.0	62.0

† The bold number is the belt width in millimeters, while the number directly under it is the width in inches.

PART NUMBER EXAMPLE:

210014M40 SYNCHRONOUS PLUS BELT

TB Wood's

SECTION
C2

QT POWER CHAIN SPROCKETS & BELTS

QT POWER CHAIN SPROCKET DIMENSIONS

8M

TB Wood's

PRODUCT NO.	BUSH-ING	NO. OF TEETH	DIAMETERS P.D.	DIAMETERS O.D. Sprocket	DIAMETERS O.D. Flange	DIAMETERS I.D.	TYPE	DIMENSIONS (INCHES) E	K	L	M	BORE Min.	BORE Max.	WT.
FOR BELTS 22 mm (.86 in.) WIDE • 8mm PITCH (8M–22) Face Width (F) = 31 mm (1.22 in.) Dual Drilled (inch/metric) ①														
W228M22*	. . .	22	2.206	2.152	2.56	. . .	MPB1F	0.62	1.62	1.84	. . .	0.500*	1.000	1.2
W248M22	JA	24	2.406	2.352	2.76	1.34	E1F	0.69	. . .	1.00	0.47	0.500	1.250	1.5
W268M22	JA	26	2.607	2.553	2.95	1.88	E1F	0.69	. . .	1.00	0.47	0.500	1.250	1.5
W288M22	QT	28	2.807	2.759	3.15	1.57	E1F	0.35	. . .	1.25	0.38	0.500	1.500	1.7
W308M22	QT	30	3.008	2.958	3.35	1.57	E1F	0.35	. . .	1.25	0.38	0.500	1.500	1.9
W328M22	QT	32	3.208	3.156	3.54	2.56	C1F	0.03	0.35	1.25	. . .	0.500	1.500	1.9
W348M22	SH	34	3.409	3.355	3.82	2.75	D1F	0.16	0.41	1.25	0.13	0.500	1.688	2.1
W368M22	SH	36	3.609	3.555	3.94	2.81	D1F	0.16	0.41	1.25	0.13	0.500	1.688	2.4
W388M22	SH	38	3.810	3.756	4.13	3.00	D1F	0.16	0.41	1.25	0.13	0.500	1.688	2.7
W408M22	SH	40	4.010	3.956	4.33	3.00	D1F	0.16	0.41	1.25	0.13	0.500	1.688	3.1
W448M22	SDS	44	4.411	4.357	4.76	3.50	D1F	0.16	0.47	1.31	0.06	0.500	2.000	3.7
W488M22	SDS	48	4.812	4.758	5.16	3.80	D1F	0.16	0.47	1.31	0.06	0.500	2.000	4.4
W568M22	SDS	56	5.614	5.560	5.95	4.60	D1F	0.16	0.47	1.31	0.06	0.500	2.000	5.7
W648M22	SDS	64	6.416	6.362	6.77	5.40	D1F	0.16	0.47	1.31	0.06	0.500	2.000	7.3
W728M22	SDS	72	7.218	7.164	7.60	6.20	D2F	0.18	0.44	1.31	0.09	0.500	2.000	7.2
W808M22	SDS	80	8.020	7.966	8.39	6.90	D2F	0.18	0.44	1.31	0.09	0.500	2.000	9.0
W908M22	SDS	90	9.023	8.969	. . .	7.90	D3	0.18	0.44	1.31	0.09	0.500	2.000	8.7
W1128M22	SK	112	11.229	11.175	. . .	10.00	C3	0.47	0.25	1.88	0.19	0.500	2.625	16.3
W1448M22	SK	144	14.437	14.370	. . .	13.20	C3	0.47	0.25	1.88	0.19	0.500	2.625	23.2
W1928M22	SF	192	19.249	19.176	. . .	18.00	C3	0.44	0.25	2.00	0.34	0.500	2.938	38.7
FOR BELTS 35 mm (1.38 in.) WIDE • 8mm PITCH (8M–35) Face Width (F) = 44 mm (1.73 in.) Dual Drilled (inch/metric) ①														
W228M35*	. . .	22	2.206	2.152	2.56	. . .	MPB1F	0.62	1.62	2.35	. . .	0.500*	1.000	1.6
W248M35*	. . .	24	2.406	2.352	2.76	. . .	MPB1F	0.62	1.81	2.35	. . .	0.500*	1.125	2.0
W268M35*	. . .	26	2.607	2.553	2.95	. . .	MPB1F	0.62	2.00	2.35	. . .	0.500*	1.250	2.4
W288M35	QT	28	2.807	2.759	3.15	1.57	E1F	0.86	. . .	1.25	0.38	0.500	1.500	2.1
W308M35	QT	30	3.008	2.958	3.35	1.57	E1F	0.86	. . .	1.25	0.38	0.500	1.500	2.4
W328M35	QT	32	3.208	3.158	3.54	2.56	A1F	0.25	0.62	1.25	0.48	0.500	1.500	2.2
W348M35	SH	34	3.409	3.355	3.82	2.75	A1F	0.06	0.62	1.25	0.42	0.500	1.688	2.4
W368M35	SH	36	3.609	3.555	3.94	2.81	A1F	0.06	0.62	1.25	0.42	0.500	1.688	2.8
W388M35	SH	38	3.810	3.756	4.13	3.00	A1F	0.06	0.62	1.25	0.42	0.500	1.688	3.1
W408M35	SH	40	4.010	3.956	4.33	3.00	D1F	0.06	0.50	1.25	0.42	0.500	1.688	3.5
W448M35	SD	44	4.411	4.357	4.76	3.50	D1F	0.38	0.25	1.81	0.29	0.500	2.000	5.3
W488M35	SD	48	4.812	4.758	5.16	3.80	D1F	0.38	0.25	1.81	0.29	0.500	2.000	6.4
W568M35	SK	56	5.614	5.560	5.95	4.60	D1F	0.47	0.25	1.88	0.32	0.500	2.625	8.6
W648M35	SK	64	6.416	6.362	6.77	5.40	D1F	0.47	0.25	1.88	0.32	0.500	2.625	11.2
W728M35	SK	72	7.218	7.164	7.60	6.20	D1F	0.47	0.25	1.88	0.32	0.500	2.625	14.0
W808M35	SF	80	8.020	7.966	8.39	6.90	D2F	0.44	0.25	2.00	0.17	0.500	2.938	14.7
W908M35	SF	90	9.023	8.969	. . .	7.90	D2	0.44	0.25	2.00	0.17	0.500	2.938	17.5
W1128M35	SF	112	11.229	11.175	. . .	10.00	D3	0.44	0.25	2.00	0.17	0.500	2.938	20.6
W1448M35	E	144	14.437	14.383	. . .	13.20	C3	0.80	0.11	2.62	0.09	0.875	3.500	35.2
W1928M35	E	192	19.249	19.195	. . .	18.00	C3	0.80	0.11	2.62	0.09	0.875	3.500	54.1
FOR BELTS 60 mm (2.36 in.) WIDE • 8mm PITCH (8M–60) Face Width (F) = 70 mm (2.76 in.) Dual Drilled (inch/metric) ①														
W228M60*	. . .	22	2.206	2.152	2.56	. . .	MPB1F	0.62	1.62	3.38	. . .	0.750*	1.000	2.2
W248M60*	. . .	24	2.406	2.352	2.76	. . .	MPB1F	0.62	1.81	3.38	. . .	0.750*	1.125	2.7
W268M60*	. . .	26	2.607	2.553	2.95	. . .	MPB1F	0.62	2.00	3.38	. . .	0.750*	1.250	3.3
W288M60*	. . .	28	2.807	2.759	3.15	. . .	MPB1F	0.62	2.28	3.38	. . .	0.750*	1.500	4.0
W308M60*	. . .	30	3.008	2.958	3.35	. . .	MPB1F	0.62	2.47	3.38	. . .	0.750*	1.625	4.8
W328M60*	. . .	32	3.208	3.156	3.54	. . .	MPB1F	0.75	2.69	3.51	. . .	0.750*	1.875	5.7
W348M60*	. . .	34	3.409	3.355	3.82	. . .	MPB1F	0.75	2.94	3.51	. . .	0.750*	2.000	6.6
W368M60	SKL	36	3.609	3.555	3.94	2.81	L1F	0.79	. . .	1.13	1.97	0.500	1.938	3.6
W388M60	SKL	38	3.810	3.756	4.13	3.00	L1F	0.79	. . .	1.13	1.97	0.500	1.938	4.3
W408M60	SKL	40	4.010	3.956	4.33	3.00	L1F	0.79	. . .	1.13	1.97	0.500	1.938	5.1
W448M60	SFL	44	4.411	4.357	4.76	3.50	L1F	0.79	. . .	1.13	1.97	0.500	2.375	5.9
W488M60	SFL	48	4.812	4.758	5.16	3.63	L1F	0.79	. . .	1.13	1.97	0.500	2.375	7.5
W568M60	EL	56	5.614	5.560	5.95	4.60	L1F	0.38	. . .	1.50	2.38	0.875	2.875	11.4
W648M60	SF	64	6.416	6.362	6.77	5.40	A1F	0.06	0.75	2.00	0.08	0.500	2.938	13.6
W728M60	E	72	7.218	7.164	7.60	6.20	A1F	0.09	1.00	2.62	0.05	0.875	3.500	21.8
W808M60	E	80	8.020	7.966	8.39	6.90	A1F	0.09	1.00	2.62	0.05	0.875	3.500	26.3
W908M60	E	90	9.023	8.969	. . .	7.90	A1	0.09	1.00	2.62	0.05	0.875	3.500	32.3
W1128M60	F	112	11.229	11.175	. . .	10.00	C1	0.80	0.26	3.62	0.06	1.000	4.000	65.7
W1448M60	F	144	14.437	14.383	. . .	13.20	C3	0.80	0.26	3.62	0.06	1.000	4.000	58.1
W1928M60	F	192	19.249	19.195	. . .	18.00	C3	0.80	0.26	3.62	0.06	1.000	4.000	74.4

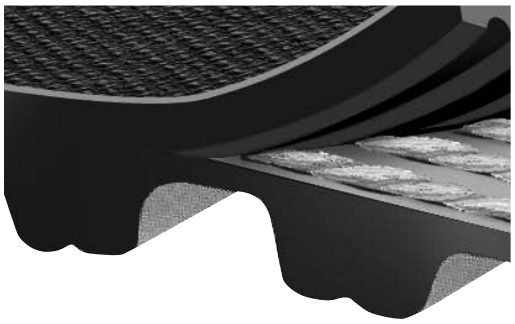
Weights for all Sure-Grip bushed items are approximate and include the bushing.
*Bored-To-Suit construction, minimum plain bore with 2 setscrews.
Refer to page C2—9 for balancing standards.
①Drilled for both inch and metric hardware. On new production manufactured after Oct. 1, 1998.

QT POWER CHAIN CONSTRUCTION

QT Power Chain® offers performance that soars.

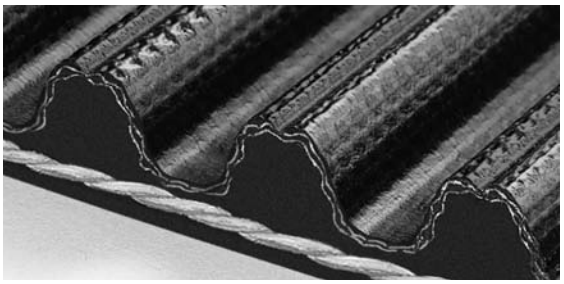
QT Power Chain® is a custom construction that offers a solution to problem drives. With its quality materials, yielding best-in-class performance, this durable synchronous belt can eliminate the unnecessary downtime that competitive belts offer. Designed for long life, QT Power Chain® can provide virtually maintenance-free operation.

Rubber Compounding

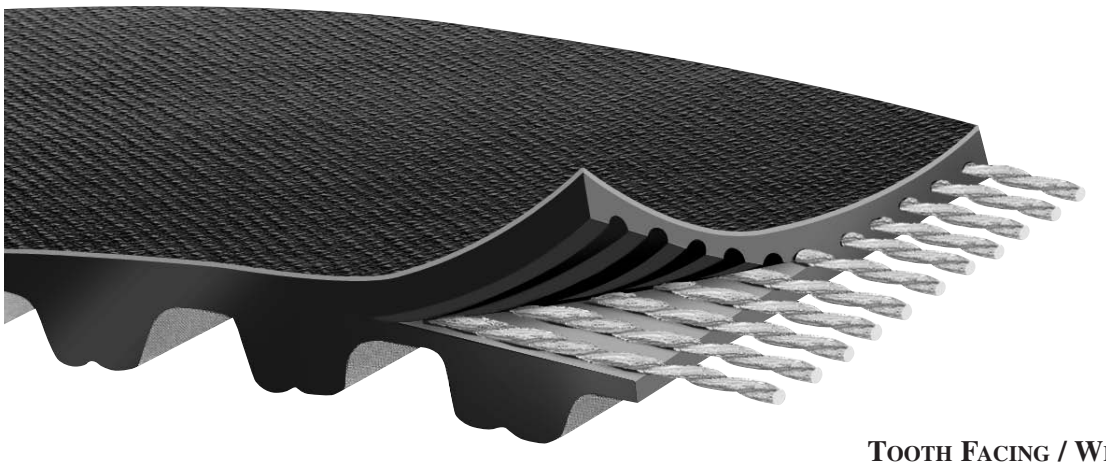


This cross-linked elastomer is formulated to resist tooth deformity and increase tooth rigidity, increasing belt life and decreasing replacement costs. Its chemical stability resists the effects of oils, coolants, heat and ozone.

Tooth profile



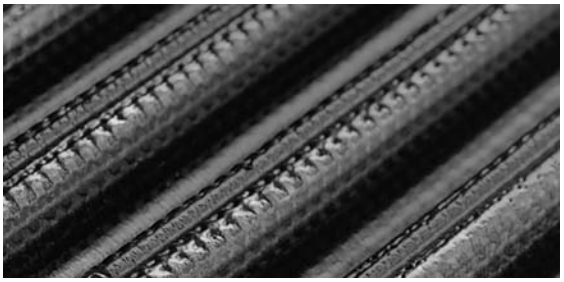
The demands of synchronous drives put additional strain on the belt and tooth surface, for high speed and low speed applications. The QT Power Chain® tooth profile resists ratcheting and provides accurate positioning for synchronous drive applications.



Tensile Members

The tensile members provide excellent dimensional stability and high impact strength. Operating at a consistent tension, QT Power Chain® requires little retensioning and less drive maintenance.

Tooth Facing / Wear Jackets



Designed for higher loads and abrasion resistance, The facing provides a reduced coefficient of friction so that the belt meshes easier with pulleys.

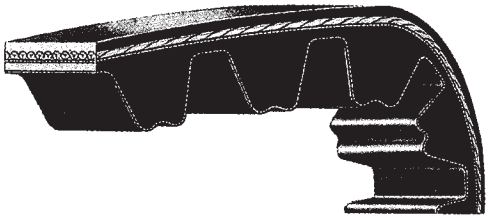
TOLERANCES ON BELT LENGTH

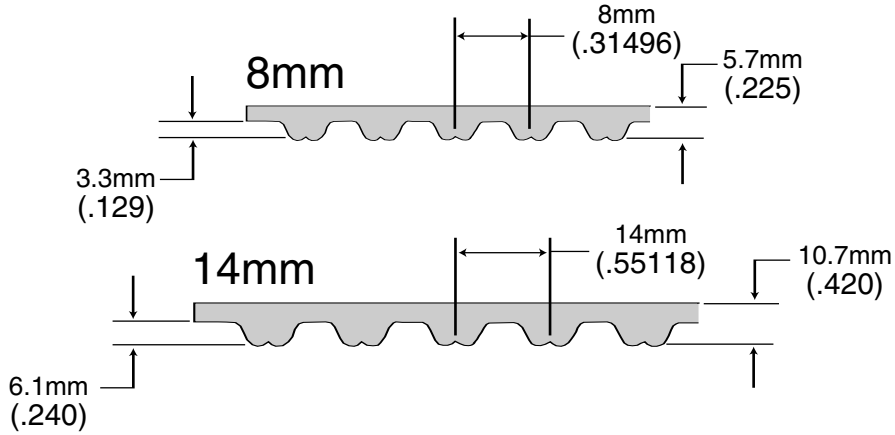
TB Wood's

Belt Length (mm)	*Std. Length Tolerances (Center-to-Center)	Belt Length (mm)	*Std. Length Tolerances (Center-to-Center)
Over 254 to 381	±0.23	Over 3302 to 3556	±0.61
Over 381 to 508	±0.25	Over 3556 to 3810	±0.64
Over 508 to 762	±0.30	Over 3810 to 4064	±0.66
Over 762 to 1016	±0.33	Over 4064 to 4318	±0.69
Over 1016 to 1270	±0.38	Over 4318 to 4572	±0.71
Over 1270 to 1524	±0.41	Over 4572 to 4826	±0.74
Over 1524 to 1778	±0.43	Over 4826 to 5080	±0.76
Over 1778 to 2032	±0.46	Over 5080 to 5534	±0.79
Over 2032 to 2286	±0.48	Over 5534 to 5588	±0.81
Over 2286 to 2540	±0.51	Over 5588 to 5842	±0.84
Over 2540 to 2794	±0.53	Over 5842 to 6096	±0.86
Over 2794 to 3048	±0.56	Over 6096 to 6350	±0.89
Over 3048 to 3302	±0.58	Over 6350 to 6604	±0.91
		Over 6604 to 6860	±0.94

*NOTE: The length tolerances given for positive drive belts refer to the center to center tolerance between belts when checked on a standard measuring fixture. The actual pitch length tolerance is twice the value shown. If a special tension member is used consult the factory for proper length tolerances.

BELT DIMENSIONS





QT POWER CHAIN BELTS

TB Wood's

QT POWER CHAIN 8mm PITCH SYNCHRONOUS BELTS*

Belt Length	Pitch Length (mm)	Pitch Length (inches)	No. of Teeth	Approx. Weight (Lbs)			
				12mm. 0.47in.	22mm. 0.87in.	35mm. 1.38in.	60mm. 2.36in.
480-8M	480	18.90	60	.08	.14	.23	.41
560-8M	560	22.05	70	.08	.18	.27	.43
600-8M	600	23.62	75	.10	.19	.29	.47
640-8M	640	25.20	80	.11	.20	.32	.50
720-8M	720	28.35	90	.12	.22	.35	.60
800-8M	800	31.50	100	.13	.24	.39	.67
880-8M	880	34.65	110	.15	.28	.43	.73
960-8M	960	37.80	120	.16	.30	.47	.80
1040-8M	1040	40.94	130	.17	.32	.50	.89
1120-8M	1120	44.09	140	.19	.34	.55	.94
1200-8M	1200	47.24	150	.20	.37	.58	1.01
1224-8M	1224	48.18	153	.21	.39	.60	1.02
1280-8M	1280	50.39	160	.22	.40	.62	1.07
1440-8M	1440	56.69	180	.24	.44	.70	1.21
1600-8M	1600	62.99	200	.27	.50	.78	1.33
1760-8M	1760	69.30	220	.29	.54	.85	1.48
1800-8M	1800	70.86	225	.30	.55	.88	1.50
2000-8M	2000	78.74	250	.34	.62	.97	1.67
2200-8M	2200	86.61	275	.37	.68	1.07	1.84
2400-8M	2400	94.48	300	.40	.74	1.17	2.00
2600-8M	2600	102.36	325	.44	.80	1.27	2.17
2800-8M	2800	110.23	350	.47	.86	1.37	2.34
3048-8M	3048	120.00	381	.51	.94	1.48	2.56
3280-8M	3280	129.13	410	.55	1.01	1.60	2.75
3600-8M	3600	141.73	450	.61	1.11	1.76	3.01
4400-8M	4400	173.23	550	.74	1.35	2.15	3.68

QT POWER CHAIN 14mm PITCH SYNCHRONOUS BELTS*

Belt Length	Pitch Length (mm)	Pitch Length (inches)	No. of Teeth	Approx. Weight (Lbs)				
				20mm. .79in.	42mm. 1.65in.	65mm. 2.56in.	90mm. 3.54in.	120mm. 4.72in.
966-14M	966	38.03	69	.40	.88	1.36	1.88	2.52
1190-14M	1190	46.85	85	.48	1.08	1.68	2.33	3.11
1400-14M	1400	55.12	100	.60	1.27	1.97	2.74	3.65
1610-14M	1610	63.39	115	.67	1.47	2.27	3.14	4.20
1778-14M	1778	70.00	127	.74	1.61	2.52	3.47	4.64
1890-14M	1890	74.41	135	.78	1.72	2.67	3.70	4.93
2100-14M	2100	82.68	150	.87	1.91	2.97	4.10	5.48
2310-14M	2310	90.94	165	.96	2.10	3.26	4.51	6.02
2450-14M	2450	96.46	175	1.02	2.24	3.46	4.79	6.40
2590-14M	2590	101.97	185	1.08	2.36	3.66	5.06	6.76
2800-14M	2800	110.24	200	1.17	2.55	3.95	5.47	7.31
3150-14M	3150	124.02	225	1.31	2.87	4.46	6.17	8.21
3360-14M	3360	132.28	240	1.40	3.06	4.75	6.56	8.76
3500-14M	3500	137.80	250	1.46	3.18	4.95	6.92	9.13
3850-14M	3850	151.58	275	1.60	3.50	5.44	7.52	10.04
4326-14M	4326	170.32	309	1.80	3.93	6.11	8.47	11.27
4578-14M	4578	180.24	327	1.90	4.16	6.48	8.95	11.92
4956-14M	4956	195.12	354	2.06	4.50	6.97	9.65	12.86

*** Part Number Example:** 210014M65W ("W" suffix indicate QT Power Chain).

Refer to page C2—7 for belt tolerances

TB Wood's

SECTION
CES

GENERAL ENGINEERING INFORMATION

- **Drive Installation & Alignment**
- **Sprocket Diameter Calculation**
- **Materials**
- **Use of Flanged Sprockets**
- **Fixed Centers Drives**
- **Teeth In Mesh**
- **Belt Pull & Bearing Loads**
- **Idler Use**
- **Troubleshooting Guide**

Below are some terms and abbreviations used on the following pages.

HP	=	Horsepower	**Ac**	=	Arc Correction Factor
DHP	=	Design Horsepower	**Lc**	=	Length Correction Factor
RPM	=	Revolutions Per Minute	**C**	=	Center Distance
D	=	Large Diameter Wheel	**d**	=	Small Diameter Wheel

Align Sprockets

Sprocket alignment and parallelism of the shafts is very important. Proper alignment helps to equalize the load across the entire belt width, thereby reducing wear and extending belt life. The sketches below show how to align a Synchronous drive properly. **PLACE A STRAIGHTEDGE** against the outside edge of the sprockets as shown in Figure 6; Figure 7 shows the four points where the straightedge should touch the sprockets.

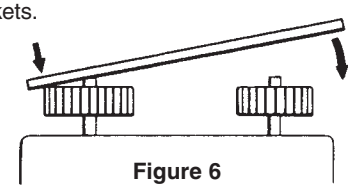


Figure 6

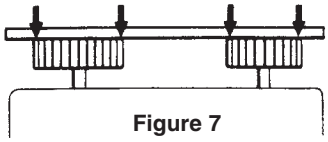


Figure 7

The straightedge should cross the sprockets at the widest possible part. (See Figure 8.) **OR USE A STRING.** Tie a string around either shaft (Figure 9) and pull it around and across the outer edge of both sprockets. Figure 10 shows how the string should touch four points when the drive is properly aligned. After aligning the sprockets, check the rigidity of the supporting framework. Shafts should be well supported to prevent distortion and a resulting change in the center distance under load. Do not use spring-loaded or weighted idlers. Idler sprockets or pulleys must be locked into position after adjusting belt tension. **Please note: At least one sprocket must have a flange.**

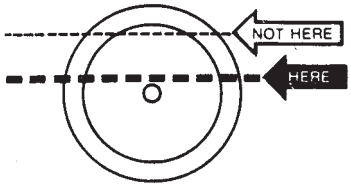


Figure 8

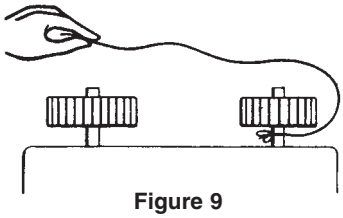


Figure 9

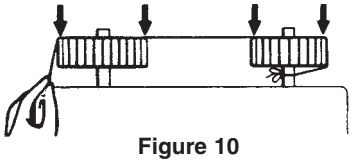


Figure 10

Install Belt

Do not pry or otherwise force the belt onto the sprockets, as this can result in permanent damage to the belt. Either remove the sprocket's outside flange or reduce the center distance between the sprockets so that the belt can be easily installed.

Belt Tensioning – General Method

This method of tensioning Synchronous belts should satisfy most drive requirements.

Step 1. Reduce the center distance so that the belt can be placed onto the sprockets without forcing or prying it over the flanges.

Step 2. Increase the belt tension until the belt feels snug or taut. Avoid over-tensioning the belt.

Step 3. Start the drive and apply the most severe load condition. This may be either the motor starting torque or during the work cycle. A belt that is too loose will "jump teeth" under the most severe load condition. When this occurs, gradually increase the belt tension until satisfactory operation is achieved.

Belt Tensioning – Force Deflection Method

A numerical method can be used to properly tension the belt on a Synchronous drive. This procedure, commonly referred to as the Force Deflection Method, consists of measuring the pounds of force required to deflect the belt a given amount.

Step 1. Install the belt as per Steps 1 and 2 of the General Method. Measure the span length (in inches) as illustrated in Figure 11.

Step 2. From Figure 11 determine the deflection height required for the drive. The deflection height is always 1/64" per inch of span length. For example, a 32" span length requires a deflection of 32/64" or 1/2". To measure the deflection height place a straightedge from sprocket to sprocket on top of the belt or wrap a string or steel tape around the sprockets on top of the belt. This will serve as a reference line to measure deflection inches.

Step 3. Using the formula at right, calculate the minimum and maximum force values (lbs.).

Step 4. Using a spring scale, apply a perpendicular force to the belt at the mid-point of the span as illustrated in Figure 1. NOTE: For belts wider than 2 inches, it is suggested that a rigid piece of keystock or something similar be placed across the belt between the point of force and the belt to prevent belt distortion. Compare this deflection force value to that found in Step 3. Adjust belt tension accordingly.

Actual belt installation tension required depends on peak loads, system rigidity, teeth in mesh, etc. In some instances it may be necessary to gradually increase the belt tension to achieve proper operation of the drive.

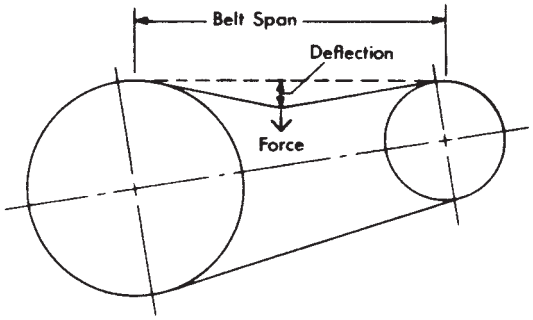


Figure 11

$$\text{Maximum Force} = \frac{4000 \times \text{DHP}}{\text{RPM} \times \text{Pitch Diameter}}$$

$$\text{Minimum Force} = \frac{5000 \times \text{BHP}}{\text{RPM} \times \text{Pitch Diameter}}$$

DHP = Belt Horsepower or Motor Horsepower x Recommended Service Factor

BHP = Brake Horsepower or Motor Horsepower

RPM = Speed of Fastest Shaft

Pitch Diameter = Diameter of Smallest Sprocket

SPROCKET DIAMETER CALCULATIONS

TB Wood's

To determine the diameter of MTO sprockets with a number of teeth other than those listed in our stock offering.

Outside Diameter (mm) 5M RPP Plus = (1.5915 x NGR) – 1.140
Outside Diameter (mm) 8M RPP Plus = (2.5565 x NGR) – 1.372
Outside Diameter (mm) 14M RPP Plus = (4.4563 x NGR) – 2.794
Outside Diameter (mm) 20M RPP Plus = (6.3662 x NGR) – 4.320

Outside Diameter (mm) 8M QT Powerchain = (2.5433 x NGR) – 1.2427
Outside Diameter (mm) 14M QT Powerchain = (4.4541 x NGR) – 2.6627

NGR = Number of Grooves
To convert (mm) to Inches multiply by .03937

Materials

Cast Iron Maximum FPM = 6500
Ductile Iron Maximum FPM = 10,000

Flanged Sprockets

Due to the tracking characteristics, even on the best aligned drives, all synchronous belts have a tendency to move axially and will ride off the edge of the sprockets. In order to keep the belt on the sprocket, side flanges are needed.

On all synchronous drives the following conditions should be considered when selecting flanged sprockets.

1. Two Sprocket Drives: One sprocket must have flanges on both sides or both sprockets must have one flange but on opposite sides.

2. Long Center Drives: When the center distance is greater than or equal to eight times the small sprocket diameter, both sprockets should be flanged.

3. Vertical Shaft Drives: One sprocket should be flanged on both sides, all other sprockets in the drive system should have one flange on the bottom side.

4. Multiple Sprocket Drives: Every other sprocket should be flanged on both sides, one flange on each sprocket on alternating sides around the entire system.

Most smaller stock sprockets are flanged (80 tooth and smaller)