

## **METRIC PITCH 'T' SERIES**

### **IDEAL FOR:**

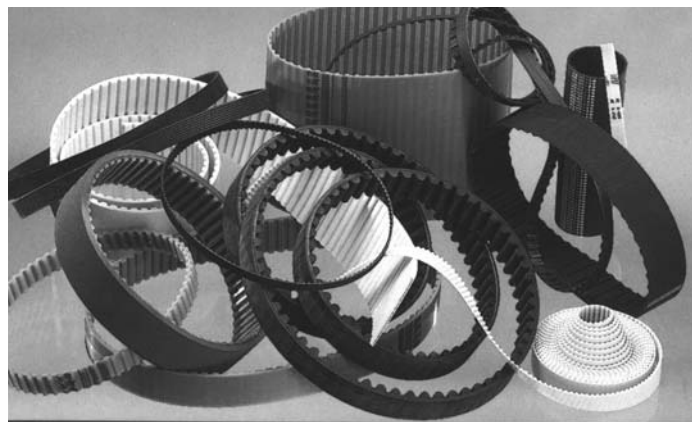
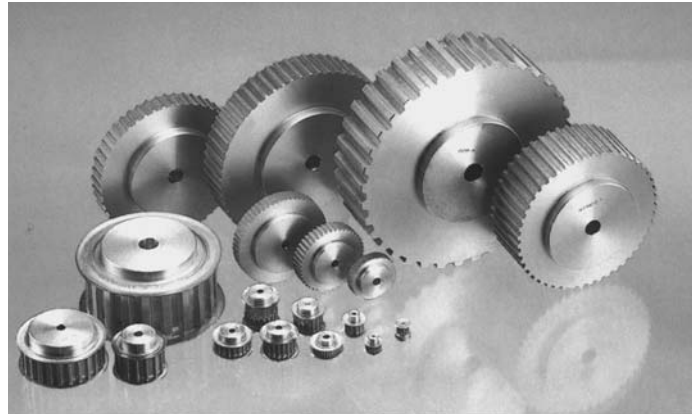
**Power Transmission**

**Low Cost Reduction**

**Linear Drives**

**Inertia Matching**

**Stepper & Servo Motors**

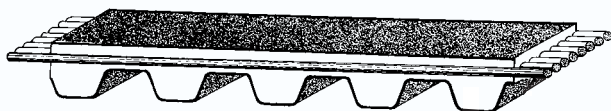


### **BELTS**

The NUOVA timing belts are constructed with teeth to prevent slippage without causing excessive belt tension. They are constructed from polyurethane and have high flexibility steel cables imbedded in the belt to support tensile loads and minimise stretching under load. This construction offers greater resistance to repeated flexing, heat, mineral lubricating oils and strain ageing. Lubrication of belts is not required so they are cleaner than chain drives.

They are available in both 5mm and 10mm pitches, depending on the size of traction loads required. Further to two pitch sizes, belts are available in various widths. The wider belts can carry greater loads.

Belts are available in either endless form with specific number of teeth or 'by the metre' for linear drives.



### **PULLEYS**

Pulleys are constructed from extruded aluminium for light weight and low inertia. Most pulleys are supplied with flanges, preventing the belt from drifting sideways, and a small pilot bore that enables machinists to bore out the correct hole diameter for corresponding shaft.

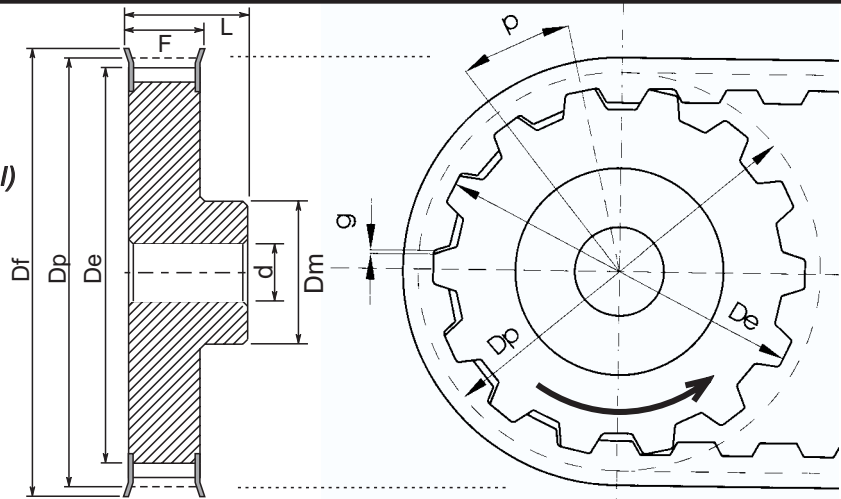
When boring holes in pulleys it is important to take the teeth as a reference for clamping in chuck jaws and not the flange or hub. This will prevent eccentricity occurring between the finished hole and the pitch circle.



## DIMENSIONS (in mm)

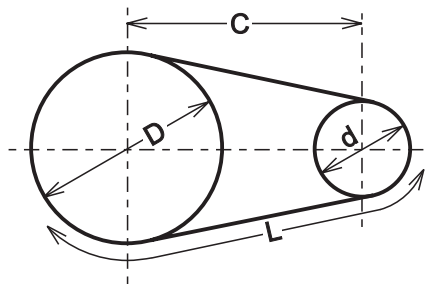
- p** Pitch of teeth
- n** Number of teeth on pulley
- Dp** Pitch circle diameter (*theoretical*)
- De** Outer diameter of teeth
- Df** Outer diameter of flange
- Dm** Diameter of hub
- F** Width of pulley teeth
- L** Width of pulley with hub
- g** Backlash
- d** Pilot bore

$$D_p = p \frac{n}{\pi}$$



Backlash is minimal and depends on belt tension, pulley diameter and pitch.

## BELT LENGTH & CENTRE DISTANCE



- D = Pitch circle diameter of large pulley (*Dp large*)
- d = Pitch circle diameter of small pulley (*Dp small*)
- C = Distance between centres
- L = Belt length
- $b = 4L - 6.283(D + d)$

To calculate the belt length when centre distance is known.

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

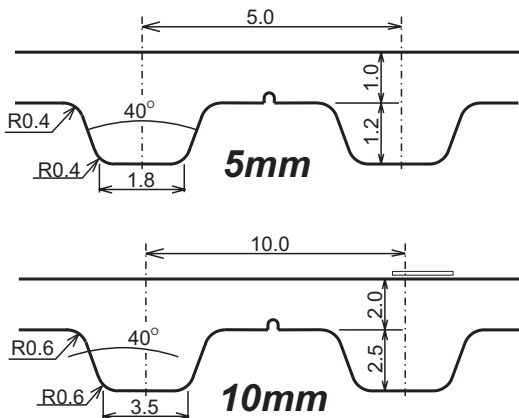
check  $C > (D + d) / 2$

To calculate the centre distance between pulleys when belt length is known.

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

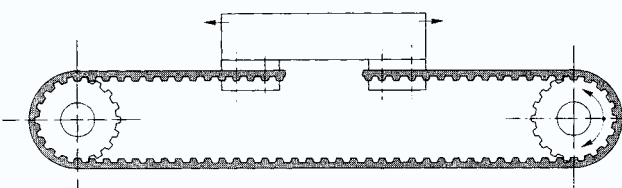
where  $b = 4L - 2\pi(D + d)$

## BELT PROFILES & LOADS



PITCH (mm)	BELT WIDTH (mm)	ELASTICITY (mm/N/m)	MAX LOAD <i>joined</i> (N)	MAX LOAD <i>endless</i> (N)	BREAKING STRENGTH (N)
<b>5</b>	10	0.0130	150	305	915
	16	0.0067	305	610	1830
	25	0.0041	490	985	2975
<b>10</b>	16	0.0025	815	1630	5110
	25	0.0016	1280	2560	8040
	32	0.0012	1685	3370	10600

## LINEAR DRIVES

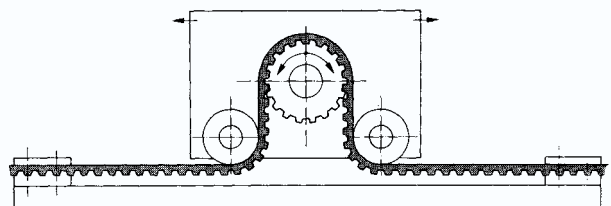


### 5mm PITCH

- Minimum number pulley teeth 10
- Minimum diameter of idler pulley inside belt 30mm

### 10mm PITCH

- Minimum number pulley teeth 12
- Minimum diameter of idler pulley inside belt 60mm



### 5mm PITCH

- Minimum diameter of idler pulley placed outside belt 30mm

### 10mm PITCH

- Minimum diameter of idler pulley placed outside belt 60mm

<b>PULLEYS, 5mm Pitch, 10mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P5/10/10	10	YES	15.92	15.09	19.5	11.0	15.0	21.0	4.0	0.008
	P5/10/12	12	YES	19.10	18.27	23.0	11.0	15.0	21.0	4.0	0.011
	P5/10/14	14	YES	22.28	21.45	25.0	14.0	15.0	21.0	5.0	0.016
	P5/10/15	15	YES	23.87	23.04	28.0	16.0	15.0	21.0	6.0	0.018
	P5/10/16	16	YES	25.47	24.64	32.0	18.0	15.0	21.0	6.0	0.022
	P5/10/18	18	YES	28.65	27.82	32.0	20.0	15.0	21.0	6.0	0.028
	P5/10/19	19	YES	30.24	29.41	36.0	22.0	15.0	21.0	6.0	0.032
	P5/10/20	20	YES	31.83	31.00	36.0	23.0	15.0	21.0	6.0	0.035
	P5/10/22	22	YES	35.05	34.19	38.0	24.0	15.0	21.0	6.0	0.042
	P5/10/24	24	YES	38.20	37.37	42.0	26.0	15.0	21.0	6.0	0.051
	P5/10/25	25	YES	39.79	38.96	44.0	26.0	15.0	21.0	6.0	0.054
	P5/10/26	26	YES	41.38	40.55	44.0	26.0	15.0	21.0	6.0	0.058
	P5/10/27	27	YES	42.97	42.14	48.0	30.0	15.0	21.0	8.0	0.064
	P5/10/28	28	YES	44.56	43.73	48.0	32.0	15.0	21.0	8.0	0.070
	P5/10/30	30	YES	47.75	46.92	51.0	34.0	15.0	21.0	8.0	0.081
	P5/10/32	32	YES	50.93	50.10	54.0	38.0	15.0	21.0	8.0	0.094
	P5/10/36	36	YES	57.30	56.47	63.0	38.0	15.0	21.0	8.0	0.115
	P5/10/40	40	YES	63.66	62.83	66.0	40.0	15.0	21.0	8.0	0.141
	P5/10/42	42	YES	66.85	66.02	71.0	40.0	15.0	21.0	8.0	0.154
P5/10/44	44	NO	70.03	69.20	n/a	45.0	15.0	21.0	8.0	0.173	
P5/10/48	48	NO	76.40	75.57	n/a	50.0	15.0	21.0	8.0	0.207	
P5/10/60	60	NO	95.50	94.67	n/a	65.0	15.0	21.0	8.0	0.331	

**Not Normally Stocked**

<b>PULLEYS, 5mm Pitch, 16mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P5/16/10	10	YES	15.92	15.09	19.5	11.0	21.0	27.0	4.0	0.011
	P5/16/12	12	YES	19.10	18.27	23.0	11.0	21.0	27.0	4.0	0.015
	P5/16/14	14	YES	22.28	21.45	25.0	14.0	21.0	27.0	5.0	0.021
	P5/16/15	15	YES	23.87	23.04	28.0	16.0	21.0	27.0	5.0	0.025
	P5/16/16	16	YES	25.47	24.64	32.0	18.0	21.0	27.0	6.0	0.029
	P5/16/18	18	YES	28.65	27.82	32.0	20.0	21.0	27.0	6.0	0.037
	P5/16/19	19	YES	30.24	29.41	36.0	22.0	21.0	27.0	6.0	0.042
	P5/16/20	20	YES	31.83	31.00	36.0	23.0	21.0	27.0	6.0	0.047
	P5/16/22	22	YES	35.02	34.19	38.0	24.0	21.0	27.0	6.0	0.056
	P5/16/24	24	YES	38.20	37.37	42.0	26.0	21.0	27.0	6.0	0.068
	P5/16/25	25	YES	39.79	38.96	44.0	26.0	21.0	27.0	6.0	0.073
	P5/16/26	26	YES	41.38	40.55	44.0	26.0	21.0	27.0	6.0	0.079
	P5/16/27	27	YES	42.97	42.14	48.0	30.0	21.0	27.0	8.0	0.086
	P5/16/28	28	YES	44.56	43.73	48.0	32.0	21.0	27.0	8.0	0.093
	P5/16/30	30	YES	47.75	46.92	51.0	34.0	21.0	27.0	8.0	0.107
	P5/16/32	32	YES	50.93	50.10	54.0	38.0	21.0	27.0	8.0	0.125
	P5/16/36	36	YES	57.30	56.47	63.0	38.0	21.0	27.0	8.0	0.154
	P5/16/40	40	YES	63.66	62.83	66.0	40.0	21.0	27.0	8.0	0.190
	P5/16/42	42	YES	66.85	66.02	71.0	40.0	21.0	27.0	8.0	0.208
P5/16/44	44	NO	70.03	69.20	n/a	45.0	21.0	27.0	8.0	0.232	
P5/16/48	48	NO	76.40	75.57	n/a	50.0	21.0	27.0	8.0	0.278	
P5/16/60	60	NO	95.50	94.67	n/a	65.0	21.0	27.0	8.0	0.443	

<b>PULLEYS, 5mm Pitch, 25mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P5/25/10	10	YES	15.92	15.09	19.5	11.0	30.0	36.0	0.0	0.016
	P5/25/12	12	YES	19.10	18.27	23.0	11.0	30.0	36.0	0.0	0.022
	P5/25/14	14	YES	22.28	21.45	25.0	14.0	30.0	36.0	0.0	0.031
	P5/25/15	15	YES	23.87	23.04	28.0	16.0	30.0	36.0	6.0	0.034
	P5/25/16	16	YES	25.47	24.64	32.0	18.0	30.0	36.0	6.0	0.039
	P5/25/18	18	YES	28.65	27.82	32.0	20.0	30.0	36.0	6.0	0.051
	P5/25/19	19	YES	30.24	29.41	36.0	22.0	30.0	36.0	6.0	0.058
	P5/25/20	20	YES	31.83	31.00	36.0	23.0	30.0	36.0	6.0	0.064
	P5/25/22	22	YES	35.02	34.19	38.0	24.0	30.0	36.0	6.0	0.078
	P5/25/24	24	YES	38.20	37.37	42.0	26.0	30.0	36.0	8.0	0.091
	P5/25/25	25	YES	39.79	38.96	44.0	26.0	30.0	36.0	8.0	0.099
	P5/25/26	26	YES	41.38	40.55	44.0	26.0	30.0	36.0	8.0	0.107
	P5/25/27	27	YES	42.97	42.14	48.0	30.0	30.0	36.0	8.0	0.118
	P5/25/28	28	YES	44.56	43.73	48.0	32.0	30.0	36.0	8.0	0.128
	P5/25/30	30	YES	47.75	46.92	51.0	34.0	30.0	36.0	8.0	0.148
	P5/25/32	32	YES	50.93	50.10	54.0	38.0	30.0	36.0	8.0	0.171
	P5/25/36	36	YES	57.30	56.47	63.0	38.0	30.0	36.0	8.0	0.213
	P5/25/40	40	YES	63.66	62.83	66.0	40.0	30.0	36.0	8.0	0.263
	P5/25/42	42	YES	66.85	66.02	71.0	40.0	30.0	36.0	8.0	0.288
P5/25/44	44	NO	70.03	69.20	n/a	45.0	30.0	36.0	8.0	0.321	
P5/25/48	48	NO	76.40	75.57	n/a	50.0	30.0	36.0	8.0	0.384	
P5/25/60	60	NO	95.50	94.67	n/a	65.0	30.0	36.0	8.0	0.610	

<b>PULLEYS, 10mm Pitch, 16mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P10/16/12	12	YES	38.20	36.35	42.0	28.0	21.0	31.0	6.0	0.072
	P10/16/14	14	YES	44.56	42.71	48.0	32.0	21.0	31.0	8.0	0.097
	P10/16/15	15	YES	47.75	45.90	51.0	32.0	21.0	31.0	8.0	0.110
	P10/16/16	16	YES	50.93	49.08	54.0	35.0	21.0	31.0	8.0	0.127
	P10/16/18	18	YES	57.30	55.45	60.0	40.0	21.0	31.0	8.0	0.164
	P10/16/19	19	YES	60.48	58.63	66.0	44.0	21.0	31.0	8.0	0.187
	P10/16/20	20	YES	63.66	61.81	66.0	46.0	21.0	31.0	8.0	0.208
	P10/16/22	22	YES	70.03	68.18	75.0	52.0	21.0	31.0	8.0	0.256
	P10/16/24	24	YES	76.40	74.55	83.0	58.0	21.0	31.0	8.0	0.310
	P10/16/25	25	YES	79.58	77.73	83.0	60.0	21.0	31.0	8.0	0.336
	P10/16/26	26	YES	82.76	80.91	87.0	60.0	21.0	31.0	8.0	0.358
	P10/16/27	27	YES	85.95	84.10	91.0	60.0	21.0	31.0	8.0	0.381
P10/16/28	28	YES	89.13	87.28	93.0	60.0	21.0	31.0	8.0	0.405	
P10/16/30	30	YES	95.50	93.65	97.0	60.0	21.0	31.0	8.0	0.456	
P10/16/32	32	YES	101.86	100.01	106.0	65.0	21.0	31.0	10.0	0.521	
P10/16/36	36	YES	114.59	112.74	119.0	70.0	21.0	31.0	10.0	0.654	
P10/16/40	40	YES	127.33	125.48	131.0	80.0	21.0	31.0	10.0	0.818	
P10/16/44	44	NO	140.06	138.21	n/a	88.0	21.0	31.0	10.0	0.993	
P10/16/48	48	NO	152.79	150.94	n/a	95.0	21.0	31.0	16.0	1.172	
P10/16/60	60	NO	190.99	189.14	n/a	110.0	21.0	31.0	16.0	1.806	

<b>PULLEYS, 10mm Pitch, 25mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P10/25/12	12	YES	38.20	36.35	42.0	28.0	30.0	40.0	6.0	0.096
	P10/25/14	14	YES	44.56	42.71	48.0	32.0	30.0	40.0	8.0	0.130
	P10/25/15	15	YES	47.75	45.90	51.0	32.0	30.0	40.0	8.0	0.148
	P10/25/16	16	YES	50.93	49.08	54.0	35.0	30.0	40.0	8.0	0.171
	P10/25/18	18	YES	57.30	55.45	60.0	40.0	30.0	40.0	8.0	0.221
	P10/25/19	19	YES	60.48	58.63	66.0	44.0	30.0	40.0	8.0	0.251
	P10/25/20	20	YES	63.66	61.81	66.0	46.0	30.0	40.0	8.0	0.278
	P10/25/22	22	YES	70.03	68.18	75.0	52.0	30.0	40.0	8.0	0.342
	P10/25/24	24	YES	76.40	74.55	83.0	58.0	30.0	40.0	8.0	0.413
	P10/25/25	25	YES	79.58	77.73	83.0	60.0	30.0	40.0	8.0	0.449
	P10/25/26	26	YES	82.76	80.91	87.0	60.0	30.0	40.0	8.0	0.480
	P10/25/27	27	YES	85.95	84.10	91.0	60.0	30.0	40.0	8.0	0.513
	P10/25/28	28	YES	89.13	87.28	93.0	60.0	30.0	40.0	8.0	0.547
	P10/25/30	30	YES	95.50	93.65	97.0	60.0	30.0	40.0	8.0	0.620
	P10/25/32	32	YES	101.86	100.01	106.0	65.0	30.0	40.0	10.0	0.707
	P10/25/36	36	YES	114.59	112.74	119.0	70.0	30.0	40.0	10.0	0.891
P10/25/40	40	YES	127.33	125.48	131.0	80.0	30.0	40.0	10.0	1.112	
P10/25/44	44	NO	140.06	138.21	n/a	88.0	30.0	40.0	10.0	1.351	
P10/25/48	48	NO	152.79	150.94	n/a	95.0	30.0	40.0	16.0	1.595	
P10/25/60	60	NO	190.99	189.14	n/a	110.0	30.0	40.0	16.0	2.474	

<b>10mm Pitch, 32mm Width</b>	<b>PART NO.</b>	<b>TEETH</b>	<b>FLANGE</b>	<b>Dp</b>	<b>De</b>	<b>Df</b>	<b>Dm</b>	<b>F</b>	<b>L</b>	<b>d</b>	<b>WEIGHT</b>
	P10/32/18	18	YES	57.30	55.45	60.0	40.0	37.0	47.0	10	0.261
	P10/32/19	19	YES	60.48	58.63	66.0	44.0	37.0	47.0	10	0.296
	P10/32/20	20	YES	63.66	61.81	66.0	46.0	37.0	47.0	12	0.325
	P10/32/22	22	YES	70.03	68.18	75.0	52.0	37.0	47.0	12	0.402
	P10/32/24	24	YES	76.40	74.55	83.0	58.0	37.0	47.0	12	0.486
	P10/32/25	25	YES	79.58	77.73	83.0	60.0	37.0	47.0	12	0.528
	P10/32/26	26	YES	82.76	80.91	87.0	60.0	37.0	47.0	12	0.567
	P10/32/27	27	YES	85.95	84.10	91.0	60.0	37.0	47.0	12	0.608
	P10/32/28	28	YES	89.13	87.28	93.0	60.0	37.0	47.0	12	0.650
	P10/32/30	30	YES	95.50	93.65	97.0	60.0	37.0	47.0	12	0.739
	P10/32/32	32	YES	101.86	100.01	106.0	65.0	37.0	47.0	12	0.847
	P10/32/36	36	YES	114.59	112.74	119.0	70.0	37.0	47.0	16	1.060
	P10/32/40	40	YES	127.33	125.48	131.0	80.0	37.0	47.0	16	1.326
	P10/32/44	44	NO	140.06	138.21	n/a	88.0	37.0	47.0	16	1.613
P10/32/48	48	NO	152.79	150.94	n/a	95.0	37.0	47.0	16	1.925	
P10/32/60	60	NO	190.99	189.14	n/a	110.0	37.0	47.0	16	2.993	

All pulley dimensions in mm  
All weights in kg.

# ENDLESS BELTS



NUMBER TEETH	BELT LENGTH	5mm PITCH BELTS		
		PART NUMBERS		
		10mm Wide	16mm Wide	25mm Wide
40	200	B5/10/200	B5/16/200	B5/25/200
44	220	B5/10/220	B5/16/220	B5/25/220
49	245	B5/10/245	B5/16/245	B5/25/245
51	255	B5/10/255	B5/16/255	B5/25/255
54	270	B5/10/270	B5/16/270	B5/25/270
56	280	B5/10/280	B5/16/280	B5/25/280
59	295	B5/10/295	B5/16/295	B5/25/295
66	330	B5/10/330	B5/16/330	B5/25/330
68	340	B5/10/340	B5/16/340	B5/25/340
70	350	B5/10/350	B5/16/350	B5/25/350
73	365	B5/10/365	B5/16/365	B5/25/365
78	390	B5/10/390	B5/16/390	B5/25/390
80	400	B5/10/400	B5/16/400	B5/25/400
82	410	B5/10/410	B5/16/410	B5/25/410
84	420	B5/10/420	B5/16/420	B5/25/420
91	455	B5/10/455	B5/16/455	B5/25/455
95	475	B5/10/475	B5/16/475	B5/25/475
96	480	B5/10/480	B5/16/480	B5/25/480
100	500	B5/10/500	B5/16/500	B5/25/500
102	510	B5/10/510	B5/16/510	B5/25/510
105	525	B5/10/525	B5/16/525	B5/25/525
110	550	B5/10/550	B5/16/550	B5/25/550
115	575	B5/10/575	B5/16/575	B5/25/575
122	610	B5/10/610	B5/16/610	B5/25/610
126	630	B5/10/630	B5/16/630	B5/25/630
130	650	B5/10/650	B5/16/650	B5/25/650
138	690	B5/10/690	B5/16/690	B5/25/690
144	720	B5/10/720	B5/16/720	B5/25/720
150	750	B5/10/750	B5/16/750	B5/25/750
156	780	B5/10/780	B5/16/780	B5/25/780

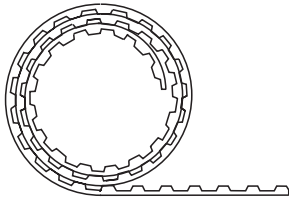
**THESE BELTS NORMALLY STOCKED**  
Contact office for other sizes also available.

NUMBER TEETH	BELT LENGTH	10mm PITCH BELTS		
		PART NUMBERS		
		16mm Wide	25mm Wide	32mm Wide
37	370	B10/16/370	B10/25/370	B10/32/370
40	400	B10/16/400	B10/25/400	B10/32/400
44	440	B10/16/440	B10/25/440	B10/32/440
50	500	B10/16/500	B10/25/500	B10/32/500
53	530	B10/16/530	B10/25/530	B10/32/530
56	560	B10/16/560	B10/25/560	B10/32/560
60	600	B10/16/600	B10/25/600	B10/32/600
63	630	B10/16/630	B10/25/630	B10/32/630
66	660	B10/16/660	B10/25/660	B10/32/660
69	690	B10/16/690	B10/25/690	B10/32/690
75	750	B10/16/750	B10/25/750	B10/32/750
78	780	B10/16/780	B10/25/780	B10/32/780
81	810	B10/16/810	B10/25/810	B10/32/810
84	840	B10/16/840	B10/25/840	B10/32/840
88	880	B10/16/880	B10/25/880	B10/32/880
90	900	B10/16/900	B10/25/900	B10/32/900
96	960	B10/16/960	B10/25/960	B10/32/960
97	970	B10/16/970	B10/25/970	B10/32/970

**THESE BELTS NORMALLY STOCKED**  
Contact office for other sizes also available.

2.5mm and 20mm pitch belts and pulleys available on request.  
Contact office for details.  
All belt lengths in mm.

## LONG LENGTH BELTS

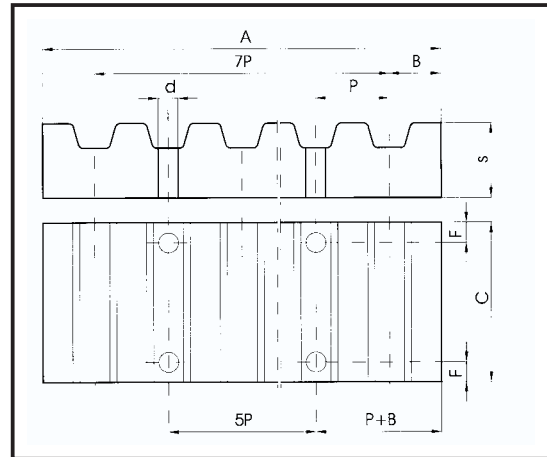
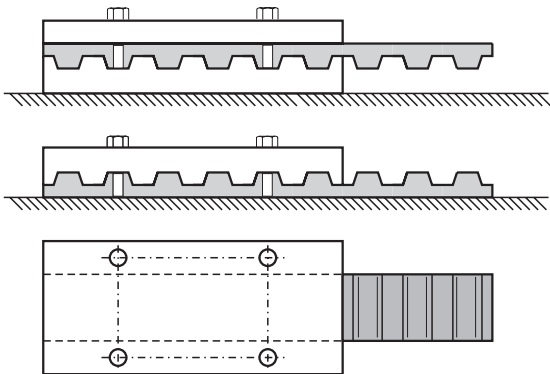


When converting rotary motion into linear motion, long distance belts are required and must be anchored at each end. These belts are sold by the metre rather than by specific number of teeth like the endless belts.

PITCH	WIDTH	PART NUMBER
<b>5</b>	10	LB5/10
	16	LB5/16
	25	LB5/25
<b>10</b>	16	LB10/16
	25	LB10/25
	32	LB10/32

## CLAMPING PLATES

Clamping plates are used to hold the ends of long length belts when converting rotary motion into linear motion. Each clamping plate is designed to hold one end of the belt. They can be used in either *teeth up* or *teeth down* configuration. They are constructed from aluminium and are supplied with bolt holes.



PITCH	F	d	B	A	S	C		
<b>5</b>	6	5.5	3.25	41.5	8	29 10mm belt	35 16mm belt	44 25mm belt
<b>10</b>	8	9.0	5	80.0	15	41 16mm belt	50 25mm belt	57 32mm belt

## ORDERING INFORMATION

### PULLEYS

**P 5 / 25 / 19**

- Number of teeth
- Width of pulley/belt (mm)
- Pitch (mm)
- P= "Pulley"

### CLAMPING PLATES

**CP 5 / 25**

- Width of pulley/belt (mm)
- Pitch (mm)
- CP = "Clamping Plate"

### ENDLESS BELTS

**B 5 / 25 / 19**

- Belt length (mm)
- Width of pulley/belt (mm)
- Pitch (mm)
- B= "Belt, endless"

### LONG LENGTH BELTS

**LB 5 / 25 / 2000**

- Length of belt (mm)
- Width of belt (mm)
- Pitch (mm)
- LB= "Long Length Belt"

Imperial MXL, XL, L, H, and XH belts and pulleys available. HTD and metric AT belts and pulleys available. Stepper motors, precision gearboxes, drives and controllers also available.

Continuous development may necessitate changes in models and specifications without notice.

# AUTOMATED MOTION SYSTEMS PTY.LTD.

MAILING ADDRESS:  
P.O.BOX 1240  
WANGARA DC  
W.A. 6947

PHONE: (08) 9309 1896  
FAX: (08) 9309 5671  
EMAIL: sales@automotsys.com.au  
INTERNET: <http://www.automotsys.com.au>

OFFICE ADDRESS:  
UNIT2, 7 BARETTA RD.  
WANGARA, PERTH  
WESTERN AUSTRALIA