

Synchronous belts

- i Calculation without errors. Pulley 1 Pulley 2
- ii Project information

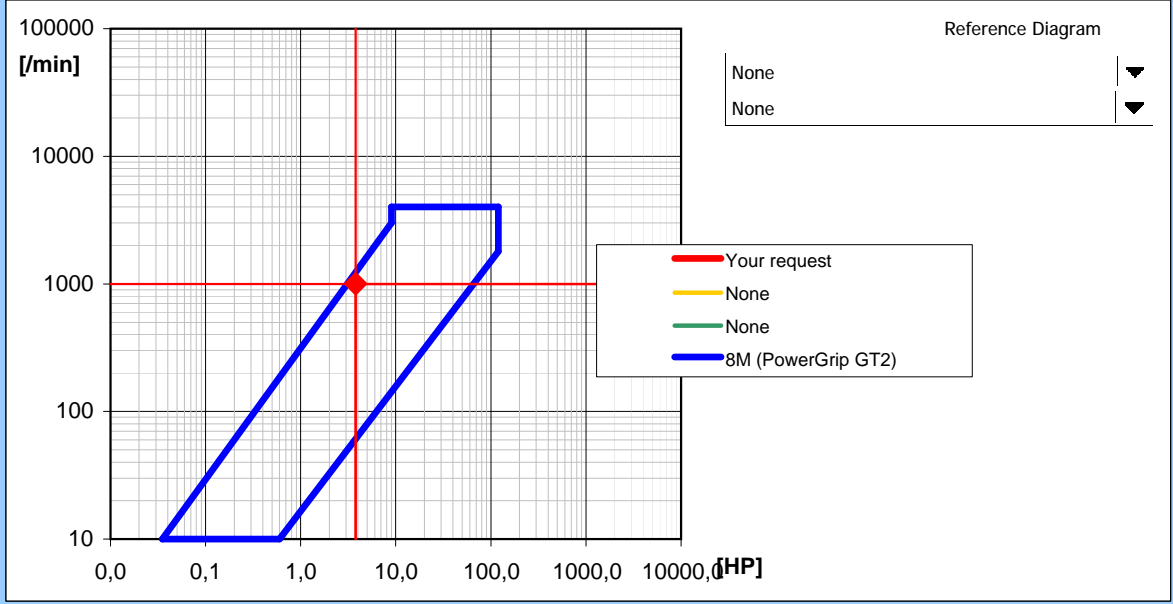
? Input section

1.0 The manner of loading, working parameters

1.1 Calculation units	Imperial (lbf, in, HP...)		
1.2 Transferred power	P	2,70 2,65	[HP]
1.3 Pulley speed (desired)	n	1000 800	[/min]
1.4 Pulley speed (actual)	n	1000,0 800,0	[/min]
1.5 The desired / actual transmission ratio	i	1,250 1,250	
1.6 Torsion moment	Mk	170,10 208,37	[lb.in]
1.7 The type of driving machine (loading)		B...Moderate shocks	▼
1.8 The type of driven machine (loading)		C...Light duty	▼
1.9 Daily loading of the transmission		A...Les then 8 hours	▼
1.10 Coefficient of operational loading	c2	1,4 1,4	<input checked="" type="checkbox"/>
1.11 Efficiency of the transmission	eta	98	[%]

2.0 Automatic design

2.1 Selection of a synchronous belt 8M (PowerGrip GT2) ▼



2.2 Theoretical min. / max. axis distance	c	2,8 - 82,7	
2.3 Axis distance for 'Automatic design'	c	7,87	[in]
2.4 Automatic design - press the button	<input type="button" value="Automatic design"/>		
2.5 Sort results according to parameter:		Weight	▼

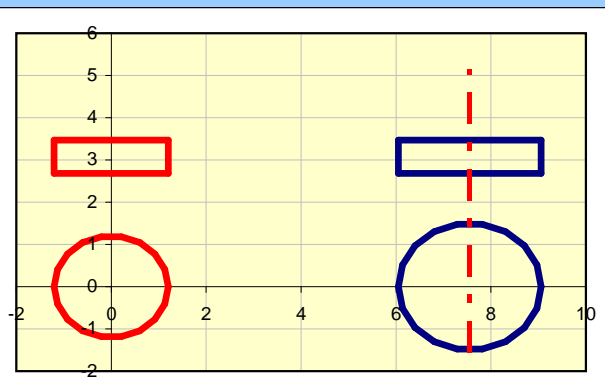
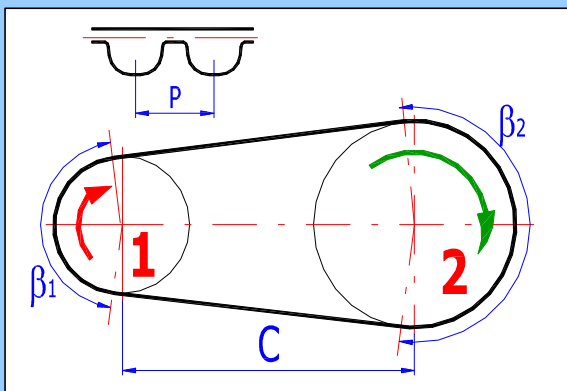
2.6 Table of solutions

ID	z1	z2	B	i	di [%]	A	dA	SF	m
02.	22	28	20,000	1,273	1,818	7,87	0,01	1,064	1,51

3.0 Design and calculation

3.1 Selected width of the synchronous belt	B	20 / 0,7874	[mm/in]
3.2 Number of pulley teeth (pulley diameter) - selection	z	24 (2,406)	[in]
3.3 Number of pulley teeth	z	24 30	
3.4 Pulley pitch diameter	Dp	2,406 3,008	[in]

3.5	Recomended axis distance / min-max	C'	4,3	3 - 10,8	[in]
3.6	Axis distance desired / actual	C	7,87	7,55	[in]
3.7	Number of belt teeth (belt length) - selection	z	130 (40,945)		[in]
3.8	Number of belt teeth / designed	z	75	75	<input checked="" type="checkbox"/>
3.9	Belt length / pitch	Lw/P	23,62	0,315	[in]
3.10	Design power	Pd	3,78		[HP]
3.11	The power transferred by the belt	P'	4,14		[HP]
3.12	Approximate total weight	m	1,42		[lb]
3.13	Coefficient of belt utilization	SF	0,91		
3.14	Non-standard solution				
3.15	Use standardized pulleys		Yes		
3.16	Use standardized lengths of the belt		Yes		



? **Results section**

4.0 Results, coeficients					
4.1 Coefficients					
4.2	- Service factor	c2	1,40		
4.3	- Acceleration factor	c3	0,00		
4.4	- Coefficient of belt length	c5	0,80		
4.5	- Coefficient of belt width	c6	1,00		
4.6	- Teeth in mesh factor	c1	1,00		
4.7	- Transmission ratio factor	c7	0,00		
4.8	- Angle of belt contact around pulley	β	175,44	184,56	[°]
4.9 Axis distance adjustability					
4.10	- For tightening of the belt	x	0,50		[in]
4.11	- For installation of the belt	y	0,50		[in]
4.12 Force conditions, speed					
4.13	- Belt speed / max. for given type	v	629,87	6496	[ft/min]
4.14 Calculation of working forces (in general)					
4.15	- Force in unloaded belt in % of tensile force		31,0	31,00	<input checked="" type="checkbox"/> [%]
4.16	- Effective pull force	Fu	141		[lbf]
4.17	- Initial belt tension	Fo	115		[lbf]
4.18	- Force in forced belt strand	F1	185		[lbf]
4.19	- Force in unloaded belt strand	F2	44		[lbf]
4.20	- Total radial force on the shaft	Fr	229		[lbf]
4.21 Working forces calculation (Gates Rubber Company ®)					
4.22	- Total radial force on the shaft	Fr	255		[lbf]

4.23 - Initial belt tension

Fo [lbf]

4.24 **Working forces calculation (ContiTech company ®)**

4.25 - Coefficient

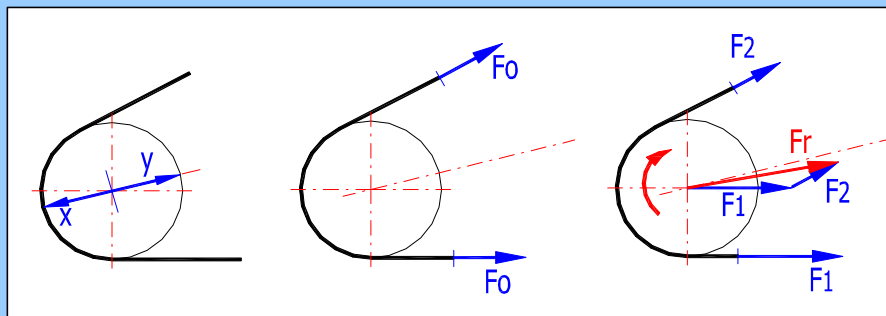
k1

4.26 - Total radial force on the shaft

Fr [lbf]

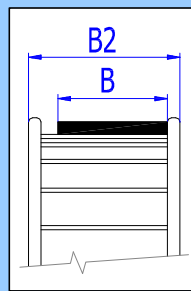
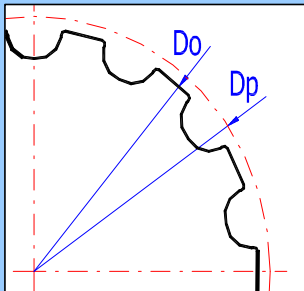
4.27 - Initial belt tension

Fo [lbf]



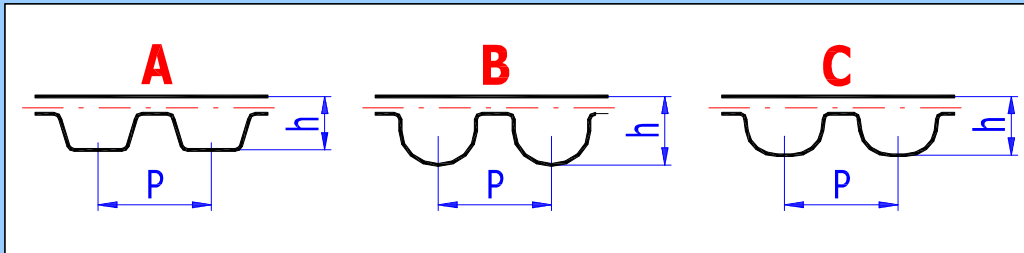
5.0 Dimensions of the pulley and belt

5.1



P	0,31	[in]
h	0,220	[in]
B	0,79	[in]
B2	1,02	[in]
Dp	2,41	3,01 [in]
Do	2,35	2,95 [in]

5.2



6.0 Graphical output, CAD systems