

V-belt

01 V Belt

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Description	KISSsoft example
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Non commercial version for demo and support purposes only ! (914)
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1 Messages

 Calculation is consistent.

2 Overview

Basis: According to manufacturer data

3 Inputs

Type	SPZ-narrow V-Belt-DIN 7753:1988/ISO 4184:1992-(CONTI-V)		
Elasticity (N)	[E]	44308.00	
Mass per length (kg/m)	[wl]	0.0720	
Length (mm)	[l]	1400.00	
Max. perm. Belt speed. (m/s)	[vmax]	50.00	
Number of belts	[neff]	1	
Theoretical no of belts	[nth]	0.76	
Sheave width (mm)	[b]	16.00	
Nominal power (kW)	[Pn]	2.00	
Operating factor	[f1]	1.00	
Operating power (kW)	[Pmax]	2.00	
		Sheave 1	Sheave 2
		-----	-----
Effective diameter (mm)	[dwk]	100.00	200.00
Loop (°)		167.57	192.43
Speed (1/min)	[n]	1500.00	750.00
Service torque (Nm)	[T]	12.73	25.47
Ratio	[n]	2.000	
Center distance (mm)	[a]	461.670	

4 Results

Angle factor	[c1]	0.970
Length factor	[c3]	0.980
Load coefficient for input to the fast	[f2]	1.000
Nominal power acc. catalogue (kW)	[P]	2.560
Additional power due to ratio (kW)	[dP]	0.213
Belt speed (m/s)	[v]	7.85
Frequency of bending (Hz)	[fB]	11.22
Slip (%)	[s]	0.57
Circumferential force (from torque) (N)	[Fu]	254.67
Centrifugal force (N)	[Ff]	4.44

4.1 Pretension according to catalog values

Test force (N)	[Fe]	25.00	
Slack (mm)	[te]	10.65	
End of rope force in stand (N)	[Fstat]	204.94	
End of rope force in no load/load (N)	[Ft]	73.17 / 327.83	
Critical speed for no load / load (m/s)	[vcrit]	32.83 / 67.93	
Tension distance (mm)	[sw]	3.26	
		Sheave 1	Sheave 2
		-----	-----
Radial force in service (N)	[Fab]	399.59	399.59
Radial force standing. (N)	[Fas]	407.47	407.47

4.2 Pretension according to calculation with coefficient of friction (min: values)

Calculation according to Niemann, Book III, with rope friction law

Coefficient of friction	[my]	1.30		
End of rope force in stand (N)	[Fstat]	137.59		
End of rope force in no load/load (N)	[Ft]	5.82 / 260.48		
Critical speed for no load / load (m/s)	[vcrit]	11.94 / 60.66		
Tension distance (mm)	[sw]	2.19		

		Sheave 1	Sheave	2
		-----	-----	
Radial force in service (N)	[Fab]	266.17	266.17	
Radial force standing. (N)	[Fas]	273.56	273.56	

Utilization: (%) [A] 75.86

Formula: $A = \text{belt.nth} / \text{belt.neff} * 100$

End of report (lines: 112)