

# Technical Data Sheet

## optibelt ALPHA TORQUE AT5 - ST

### PU Timing Belt, Cast Polyurethane, Endless

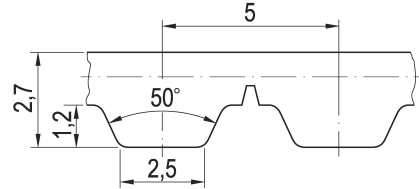


#### Dimensions, Tolerances

Profile:	AT5
Tooth pitch t:	5 mm
Total thickness:	2.7 mm
Tooth height:	1.2 mm
Tooth tip width:	2.5 mm
Tooth flank angle:	50°
Length tolerance:	See table
Width tolerance, b ≤ 25 mm:	±0.5 mm
Thickness tolerance:	±0.15 mm

#### Construction

Polyurethane: Thermoset, 84 +/-4 Shore A, transparent  
Tension cord: Steel, Ø 0.5 mm



#### Specific nominal power transmittable per tooth

Speed, small pulley n <sub>k</sub> [1/min]	Specific nom. power P <sub>N spez</sub> [W/mm]	Speed, small pulley n <sub>k</sub> [1/min]	Specific nom. power P <sub>N spez</sub> [W/mm]	Speed, small pulley n <sub>k</sub> [1/min]	Specific nom. power P <sub>N spez</sub> [W/mm]
0 <sup>1</sup>	0.000	1200	0.248	3600	0.544
20	0.006	1300	0.264	3800	0.563
40 <sup>2</sup>	0.012	1400	0.279	4000	0.582
60	0.017	1500	0.294	4500	0.626
80 <sup>3</sup>	0.023	1600 <sup>7</sup>	0.309	5000	0.667
100	0.028	1700	0.323	5500	0.705
200 <sup>4</sup>	0.054	1800	0.337	6000	0.740
300	0.078	1900	0.350	6500	0.773
400 <sup>5</sup>	0.100	2000	0.363	7000	0.804
500	0.121	2200	0.389	7500	0.832
600	0.142	2400	0.414	8000	0.859
700	0.161	2600	0.438	8500	0.884
800 <sup>6</sup>	0.180	2800	0.460	9000	0.907
900	0.198	3000	0.482	9500	0.929
1000	0.215	3200 <sup>8</sup>	0.504	10000	0.949
1100	0.232	3400	0.524	v <sub>max</sub> = 80 m/s	

<sup>1</sup>F<sub>N spez</sub> [N/mm] 3.600 <sup>2</sup>3.513 <sup>3</sup>3.435 <sup>4</sup>3.243 <sup>5</sup>3.009 <sup>6</sup>2.694 <sup>7</sup>2.314 <sup>8</sup>1.889

#### Nominal power P<sub>N</sub>

$$P_N = P_{N\ spez} \cdot z_k \cdot z_{eB} \cdot b / 10^3 \quad [\text{kW}]$$

P<sub>N spez</sub> Specific nominal power transmittable per tooth [W/mm]  
z<sub>k</sub> Number of teeth, small pulley  
z<sub>eB</sub> Number of teeth in mesh, small pulley, limited to z<sub>eB max</sub>  
z<sub>eB max</sub> 12, maximum allowable no. of teeth  
b Belt width [mm]

#### Nominal torque M<sub>N</sub>

$$M_N = P_N \cdot 9.55 \cdot 10^3 / n_k \quad [\text{Nm}]$$

n<sub>k</sub> Speed, small pulley [1/min]

#### Nominal tensile force F<sub>N</sub>

$$F_N = F_{N\ spez} \cdot z_{eB} \cdot b \quad [\text{N}]$$

$$F_{N\ spez} = P_{N\ spez} \cdot 6 \cdot 10^4 / (n_k \cdot t) \quad [\text{N/mm}]$$

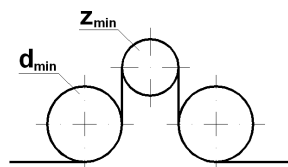
F<sub>N spez</sub> Specific nominal tensile force transmittable per tooth [N/mm]  
t Tooth pitch [mm]

#### Cord tensile forces, belt weight

Belt width <sup>1</sup> b [mm]	6	10	12	16	20	25	32	50	75	100
Breaking strength F <sub>Br</sub> [N]	1420	2860	3700	5100	6560	8300	10800	17200	26400	35200
Allowable tensile force <sup>2</sup> F <sub>zul</sub> [N]	355	715	925	1275	1640	2075	2700	4300	6600	8800
Weight per metre [kg/m]	0.020	0.034	0.041	0.054	0.068	0.085	0.109	0.170	0.255	0.340

<sup>1</sup> Other and intermediate widths possible <sup>2</sup> Allowable tensile force F<sub>zul</sub> equivalent to 25% breaking strength F<sub>Br</sub> of the cords

#### Timing belt pulleys, inside and outside idlers



No. of teeth: z<sub>min</sub> = 15  
Pitch-Ø: d<sub>w min</sub> = 23.87 mm  
Plane, cylindrical idlers, Ø  
Inside idler: d<sub>min</sub> = 21 mm  
Outside idler: d<sub>min</sub> = 50 mm

#### Length tolerances, shown as centre distance tolerances

Length L <sub>w</sub> [mm]	Tolerance a <sub>LTol</sub> [mm]	Length L <sub>w</sub> [mm]	Tolerance a <sub>LTol</sub> [mm]
≤ 305	± 0.14	> 780 ≤ 990	± 0.28
> 305 ≤ 390	± 0.16	> 990 ≤ 1250	± 0.32
> 390 ≤ 525	± 0.18	> 1250 ≤ 1560	± 0.38
> 525 ≤ 630	± 0.21	> 1560 ≤ 1960	± 0.44
> 630 ≤ 780	± 0.24	> 1960 ≤ 2350	± 0.52

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