

Technical Data Sheet

optibelt ALPHA TORQUE AT5 - ST

PU Timing Belt, Cast Polyurethane, Endless

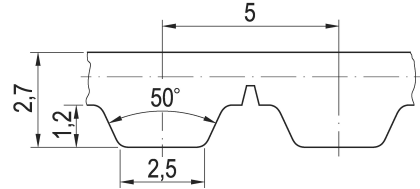


Dimensions, Tolerances

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_k [1/min]	Specific nom. power $P_{N\text{ spez}}$ [W/mm]	Speed, small pulley n_k [1/min]	Specific nom. power $P_{N\text{ spez}}$ [W/mm]	Speed, small pulley n_k [1/min]	Specific nom. power $P_{N\text{ spez}}$ [W/mm]
0 ¹	0.000	1200	0.248	3600	0.544
20	0.006	1300	0.264	3800	0.563
40 ²	0.012	1400	0.279	4000	0.582
60	0.017	1500	0.294	4500	0.626
80 ³	0.023	1600 ⁷	0.309	5000	0.667
100	0.028	1700	0.323	5500	0.705
200 ⁴	0.054	1800	0.337	6000	0.740
300	0.078	1900	0.350	6500	0.773
400 ⁵	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 ⁶	0.180	2800	0.460	9000	0.907
900	0.198	3000	0.482	9500	0.929
1000	0.215	3200 ⁸	0.504	10000	0.949
1100	0.232	3400	0.524	$v_{\max} = 80 \text{ m/s}$	

¹ $F_{N\text{ spez}}$ [N/mm] 3.600 ² 3.513 ³ 3.435 ⁴ 3.243 ⁵ 3.009 ⁶ 2.694 ⁷ 2.314 ⁸ 1.889

Nominal power P_N

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

$P_{N\text{ spez}}$	Specific nominal power transmittable per tooth [W/mm]
Z_k	Number of teeth, small pulley
Z_{eB}	Number of teeth in mesh, small pulley, limited to $Z_{eB\text{ max}}$
$Z_{eB\text{ max}}$	12, maximum allowable no. of teeth
b	Belt width [mm]

Nominal torque M_N

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

n_k Speed, small pulley [1/min]

Nominal tensile force F_N

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

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

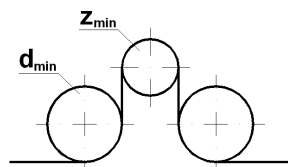
$F_{N\text{ spez}}$	Specific nominal tensile force transmittable per tooth [N/mm]
t	Tooth pitch [mm]

Cord tensile forces, belt weight

Belt width ¹ b [mm]	6	10	12	16	20	25	32	50	75	100
Breaking strength F_{Br} [N]	1420	2860	3700	5100	6560	8300	10800	17200	26400	35200
Allowable tensile force ² F_{zul} [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

¹ Other and intermediate widths possible ² Allowable tensile force F_{zul} equivalent to 25% breaking strength F_{Br} of the cords

Timing belt pulleys, inside and outside idlers



No. of teeth: $Z_{\min} = 15$
Pitch-Ø: $d_{w\min} = 23.87 \text{ mm}$
Plane, cylindrical idlers, Ø
Inside idler: $d_{\min} = 21 \text{ mm}$
Outside idler: $d_{\min} = 50 \text{ mm}$

Length tolerances, shown as centre distance tolerances

Length L_w [mm]	Tolerance a_{LTol} [mm]	Length L_w [mm]	Tolerance a_{LTol} [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