

Technical Data Sheet

optibelt ALPHA FLEX AT5 – RF

PU Timing Belt, Endless

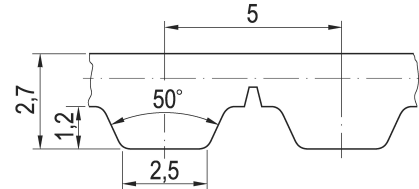


Dimensions, Tolerances

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:	±0.5 mm/m
Width tolerance:	±0.5 mm
Thickness tolerance:	±0.3 mm

Construction

Polyurethane:	Thermoplastic, 85 Shore A FDA, transparent
Tension cord:	Stainless steel, Ø 0.5 mm



Specific nominal power transmittable per tooth

Speed, small pulley n_k [1/min]	Specific nom. power $P_{N\ spez}$ [W/mm]	Speed, small pulley n_k [1/min]	Specific nom. power $P_{N\ spez}$ [W/mm]	Speed, small pulley n_k [1/min]	Specific nom. power $P_{N\ spez}$ [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 $F_{N\ spez}$ [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

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

$P_{N\ spez}$	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 $z_{eB\ max}$
$z_{eB\ max}$	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

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

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

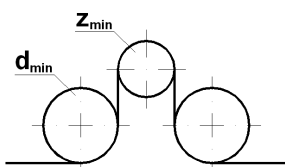
$F_{N\ spez}$	Specific nominal tensile force transmittable per tooth [N/mm]
t	Tooth pitch [mm]

Cord tensile forces, belt weight

Belt width ¹ b [mm]	10	12	16	20	25	32	50	75	100
Breaking strength F_{Br} [N]	1840	2310	3460	4390	5775	7620	12240	18480	24950
Allowable tensile force ² F_{zul} [N]	460	580	870	1100	1440	1905	3060	4620	6240
Weight per metre [kg/m]	0.033	0.040	0.053	0.066	0.083	0.106	0.165	0.248	0.330
Min. belt length [mm]	1100	1100	1100	1100	1100	1100	1100	1100	1100

¹ Smaller 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



Minimum number of teeth of the pulley:

$$z_{min} = 18$$

Minimum pitch diameter of the pulley:

$$d_{w\ min} = 23.87\text{ mm}$$

Plane, cylindrical idlers:

Minimum pitch diameter of an inside idler:

$$d_{min} = 45\text{ mm}$$

Minimum pitch diameter of an outside idler:

$$d_{min} = 54\text{ mm}$$