

Technical Data Sheet

optibelt ALPHA TORQUE XL - ST

PU Timing Belt, Cast Polyurethane, Endless

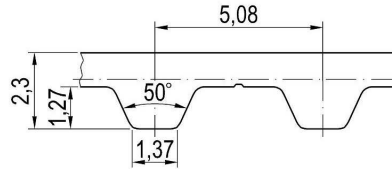


Dimensions, Tolerances

Profile:	XL
Tooth pitch t:	1/5 in = 5.08 mm
Total thickness:	2.3 mm
Tooth height:	1.27 mm
Tooth tip width:	1.37 mm
Tooth flank angle:	50°
Length tolerance:	See table
Width tolerance:	+0.5/-0.8 mm
Thickness tolerance:	±0.25 mm

Construction

Polyurethane: Thermoset, 84 +/-4 Shore A, transparent
Tension cord: Steel, Ø 0.3 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	0.152	3600	0.347
20	0.004	1300	0.162	3800	0.361
40 ²	0.008	1400	0.171	4000	0.374
60	0.011	1500	0.181	4500	0.406
80 ³	0.015	1600 ⁷	0.190	5000	0.436
100	0.018	1700	0.199	5500	0.465
200 ⁴	0.034	1800	0.208	6000	0.492
300	0.048	1900	0.217	6500	0.519
400 ⁵	0.062	2000	0.225	7000	0.544
500	0.074	2200	0.242	7500	0.568
600	0.087	2400	0.258	8000	0.591
700	0.098	2600	0.274		
800 ⁶	0.110	2800	0.290		
900	0.121	3000	0.304		
1000	0.131	3200 ⁸	0.319		
1100	0.142	3400	0.333		
				$v_{\text{max}} = 80 \text{ m/s}$	

¹ $F_{N\text{ spez}}$ [N/mm] 2.450 ²2.317 ³2.222 ⁴2.035 ⁵1.852 ⁶1.646 ⁷1.425 ⁸1.196

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

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

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

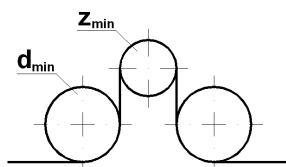
$F_{N\text{ spez}}$ Specific nominal tensile force transmittable per tooth [N/mm]
 t Tooth pitch [mm]

Cord tensile forces, belt weight

Width code	025	031	037
Belt width ¹ b [mm]	6.4	7.9	9.4
Breaking strength F_{Br} [N]	1660	2135	2610
Allowable tensile force ² F_{zul} [N]	415	530	650
Weight per metre m_L [kg/m]	0.012	0.015	0.018

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: $Z_{\text{min}} = 10$
Pitch-Ø: $d_{w\text{ min}} = 16.17 \text{ mm}$
Plane, cylindrical idlers, Ø
Inside idler: $d_{\text{min}} = 30 \text{ mm}$
Outside idler: $d_{\text{min}} = 30 \text{ mm}$

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	$> 780 \leq 990$	± 0.28
$> 305 \leq 390$	± 0.16	$> 990 \leq 1250$	± 0.32
$> 390 \leq 525$	± 0.18	$> 1250 \leq 1560$	± 0.38
$> 525 \leq 630$	± 0.21		
$> 630 \leq 780$	± 0.24		