

# Technical Data Sheet

## optibelt ALPHA FLEX 5M - HF

### PU Timing Belt, Optionally with Fabric PAZ, Endless

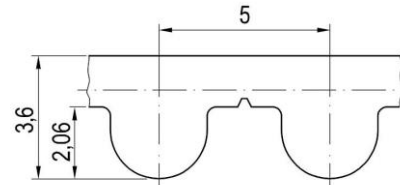


#### Dimensions, Tolerances

Profile:	5M
Tooth pitch t:	5 mm
Total thickness:	3.6 mm
Tooth height:	2.06 mm
Length tolerance:	±0.5 mm/m
Width tolerance:	±0.5 mm
Thickness tolerance:	±0.3 mm

#### Construction

Polyurethane:	Thermoplastic, 92 Shore A, white
Tension cord:	Steel, high flexible, Ø 0.5 mm
Fabric, optional:	Polyamide, tooth side (PAZ), green PAZ from 1500 mm production length



#### Specific nominal power transmittable per tooth

rpm, small idler $n_k$ [1/min]	Spec. nom. power $P_{N\ spez}$ [W/mm]	rpm, small idler $n_k$ [1/min]	Spec. nom. power $P_{N\ spez}$ [W/mm]	rpm, small idler $n_k$ [1/min]	Spec. nom. power $P_{N\ spez}$ [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		$v_{max} = 80\text{ m/s}$

#### 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 idler
$z_{eB}$	Number of teeth in mesh, small idler, limited to $z_{eB\ max}$
$z_{eB\ max}$	12, max. allowable no. of teeth
$b$	belt width [mm]

#### Nominal torque $M_N$

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

$n_k$  rpm, small idler [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]

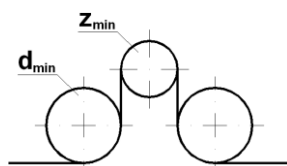
<sup>1</sup>  $F_{N\ spez}$  [N/mm] 3.600 <sup>2</sup> 3.513 <sup>3</sup> 3.435 <sup>4</sup> 3.243 <sup>5</sup> 3.009 <sup>6</sup> 2.694 <sup>7</sup> 2.314 <sup>8</sup> 1.889

#### Cord tensile forces, belt weight

Belt width <sup>1</sup> $b$ [mm]	10	12	15	20	25	32	50	75	100
Breaking strength $F_{Br}$ [N]	2160	2680	4040	5120	6720	8880	14280	21600	29160
Allowable tensile force <sup>2</sup> $F_{zul}$ [N]	540	670	1010	1280	1680	2220	3570	5400	7290
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

<sup>1</sup> Smaller and intermediate widths possible <sup>2</sup> Allowable tensile force  $F_{zul}$  equivalent to 25% breaking strength  $F_{Br}$  of the cords

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



Minimum no. of teeth of the pulleys:  
Minimum pitch diameter of the pulleys:

$z_{min} = 12$   
 $d_{w\ min} = 19.10\text{ mm}$

Plane, cylindrical idlers:  
Minimum-Ø of a plane inside idler:  
Minimum-Ø of a plane outside idler:

not recommended, see pulley  
 $d_{min} = 36\text{ mm}$