

Technical Data Sheet

optibelt ALPHA FLEX AT5K6 - HF

PU Timing Belt, Endless

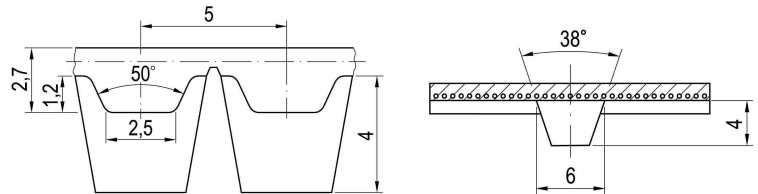


Dimensions, Tolerances

| | |
|----------------------------------|-----------------|
| Profile: | AT5K6 |
| Tooth pitch t: | 5 mm |
| Total thickness without V guide: | 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: | ±0.15 mm |
| V guide width, -height, -angle: | 6 mm, 4 mm, 38° |

Construction

| | |
|---------------|----------------------------------|
| Polyurethane: | Thermoplastic, 92 Shore A, white |
| Tension cord: | Steel, high flexible, 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

Nennleistung P_N

$$P_N = P_{N\ spez} \cdot z_k \cdot z_{eB} \cdot (b - 6) / 10^3 \text{ [kW]}$$

$P_{N\ spez}$ 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

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

n_k Speed, small pulley [1/min]

Nominal tensile force F_N

$$F_N = F_{N\ spez} \cdot z_{eB} \cdot (b - 6)$$

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

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

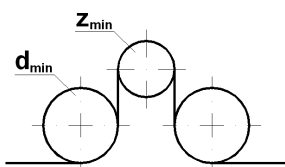
t Tooth pitch [mm]

Cord tensile forces, belt weight

| Belt width ¹ b [mm] | 16 | 25 | 32 | 50 |
|--|-------|-------|-------|-------|
| Breaking strength F_{Br} [N] | 4050 | 6750 | 8920 | 14310 |
| Allowable tensile force ² F_{zul} [N] | 1010 | 1690 | 2230 | 3580 |
| Weight per metre [kg/m] | 0.066 | 0.103 | 0.132 | 0.206 |
| Min. belt length [mm] | 1500 | 1500 | 1500 | 1500 |

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:

$$z_{min} = 20$$

Minimum pitch diameter of the pulley:

$$d_{w\ min} = 31.83\text{ mm}$$

Plane, cylindrical idlers:

Minimum pitch diameter of an inside idler:

$$d_{min} = 28\text{ mm}$$

Minimum pitch diameter of an outside idler:

$$d_{min} = 55\text{ mm}$$