

Technical Data Sheet

optibelt ALPHA FLEX 5M - RF

PU Timing Belt, endless

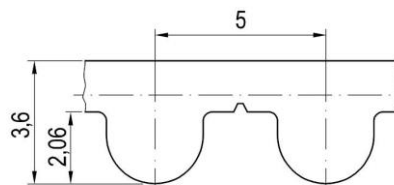


Dimensions, Tolerances

| | |
|----------------------|-----------|
| 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, 85 Shore A, FDA transparent |
| Tension cord: | Stainless steel, Ø 0.5 mm |



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 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 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

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

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

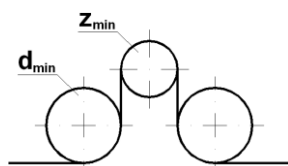
| | |
|---------------|---|
| $F_{N\ spez}$ | Specific nominal tensile force transmittable per tooth [N/mm] |
| t | Tooth pitch [mm] |

Cord tensile forces, belt weight

| Belt width ¹ b [mm] | 10 | 12 | 15 | 20 | 25 | 32 | 50 | 75 | 100 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Breaking strength F_{Br} [N] | 1840 | 2300 | 3220 | 4380 | 5760 | 7620 | 12240 | 18480 | 24940 |
| Allowable tensile force ² F_{zul} [N] | 460 | 575 | 805 | 1095 | 1440 | 1905 | 3060 | 4620 | 6235 |
| Weight per metre [kg/m] | 0.038 | 0.046 | 0.057 | 0.076 | 0.095 | 0.122 | 0.190 | 0.285 | 0.380 |
| 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 no. of teeth of the pulleys:

$$z_{min} = 18$$

Minimum pitch diameter of the pulleys:

$$d_{w\ min} = 28,65\text{ mm}$$

Plane, cylindrical idlers:

Minimum-Ø of a plane inside idler:

not recommended, see pulley

Minimum-Ø of a plane outside idler:

$$d_{min} = 70\text{ mm}$$