

PRODUCT DESCRIPTION

TIMING BELTS IN **optibelt** **OMEGA** PROFILE

STANDARD PROPERTIES



All optibelt OMEGA timing belts have inherent resistance to oil, heat, cold, ozone and tropical conditions. Special labelling is not required.

Oil resistance

The limited oil resistance prevents the damaging effects of mineral oils and greases, as long as these substances are not in permanent contact with the timing belt and/or are not present in large quantities. With increased demands for resistance, e.g. to mineral oils, the performance of the optibelt OMEGA timing belts can be improved by using special belt constructions. Please contact the optibelt Application Engineering Department.

Temperature resistance

The timing belt can withstand ambient temperatures from $\approx -30\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$. Temperatures outside this range lead to premature ageing and embrittlement of the timing belts and thus to their premature failure. The temperature resistance of optibelt OMEGA timing belts can be extended using special belt constructions, e.g. up to $+140\text{ }^{\circ}\text{C}$. Please contact the OPTIBELT Application Engineering Department.

Antistatic properties

Antistatic properties enable the safe discharge of electrostatic charges. This charging can have such a strong impact on timing belts with insufficient electrical conductivity that there is the danger of ignition due to sparks. The use of antistatic timing belts requires that the properties be checked in accordance with ISO 9563, and is confirmed by the issue of an inspection certificate. OMEGA HP and OMEGA HL timing belts in profiles 8M and 14M as well as OMEGA FAN POWER are antistatic according to ISO 9563 by standard and are thus labelled accordingly.

Noise emission

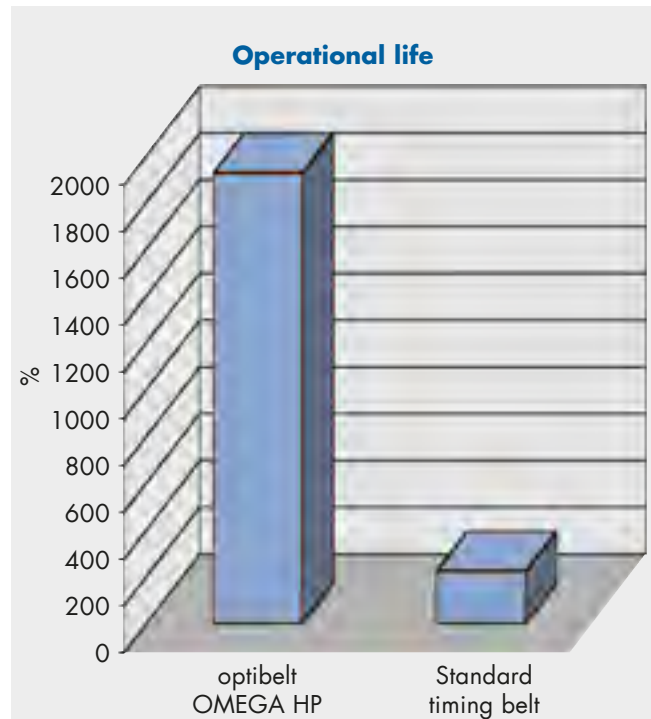
The optimized tooth shape and the indent in the tooth tip of the optibelt OMEGA promote a significantly lower noise level. In combination with the newly developed materials, the noise level is further reduced, even at high speeds and with high belt tensions.

Operational life

Belt designs with increased capacity can exceed the potential operational life of standard designs many times over, particularly for highly loaded or overloaded drives. Example: Dynamic tests with optibelt OMEGA HP show that the running times, compared to standard timing belts, are up to 18 times higher.

Efficiency

The specially developed tooth fabric and the flexible belt design make possible a virtually frictionless drive with an efficiency of up to 98 %.



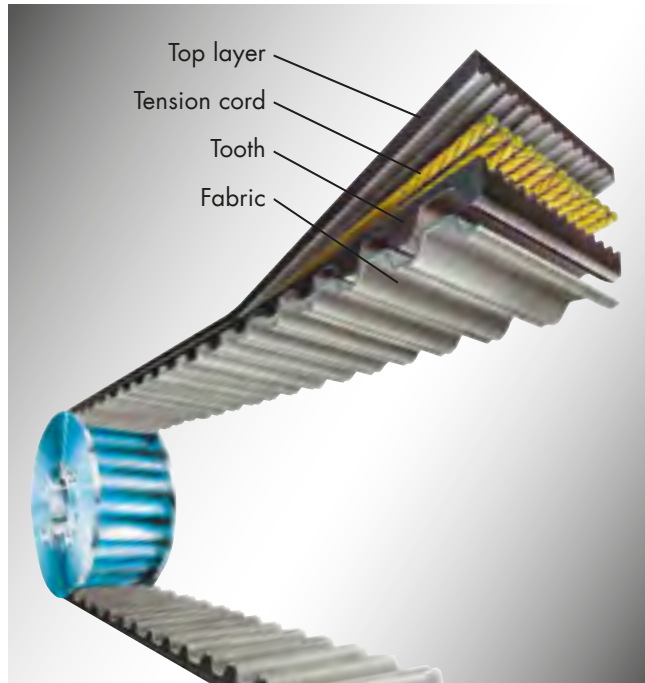
Application example: roller path

PRODUCT DESCRIPTION

optibelt OMEGA HP TIMING BELTS



Structure



Top layer

A durable and flexible top layer protects the tension cord from external influences. In addition, the polychloroprene compound is reinforced with aramid fibres and has a degree of resistance to mineral oils and humidity as well as protection from wear and tear due to friction.

Tension cord

The tension cords are reinforced pairs of counter twisted glass fibres. These tension cords have very high tensile strength, very high flexibility and minimal stretch.

Teeth

The teeth consist of a new compound reinforced with aramid fibres, which guarantee high shear strength. They are shaped and exactly spaced in such a way that they mesh perfectly with the pulley teeth with minimal friction. The indent in the tooth guarantees quiet running.

Fabric

The specially developed polyamide fabric stands out due to its extraordinarily low frictional coefficient and its low noise characteristics. It also protects the teeth from early wear and tear and prevents tooth shear.

The high performance timing belt for high load, high speed machine drives

Compact synchronous drives are used in the whole field of mechanical drive engineering. High power transmission capability, good running characteristics and high operational safety are only some of the demands made on timing belts. Modern manufacturing techniques and quality inspections during all processing stages ensure products with highest reliability. optibelt OMEGA HP high performance timing belts have been especially developed for high load, low and high speed drives that are evenly loaded without heavy shock. Improved materials and optimised production form the basis for this very high performance range.

optibelt OMEGA, OMEGA HP and OMEGA HL timing belts are used in optibelt ZRS HTD® timing belt pulleys or in optibelt ZRS RPP® timing belt pulleys. For applications using other pulleys, please contact the OPTIBELT Application Engineering Department.



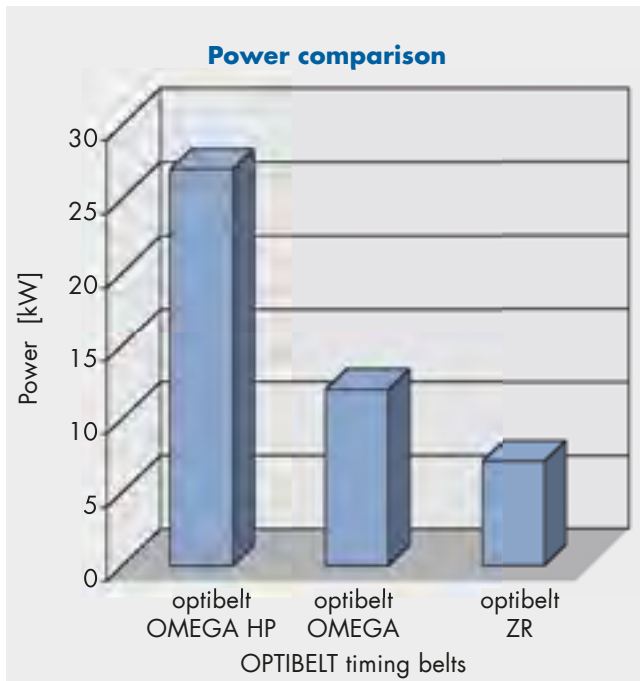
Application example: test bench

The new high performance timing belt optibelt OMEGA 5M HP

In the field of the high performance timing belts the optibelt OMEGA 5M HP has been developed for small pulley diameters, short centre distances and high speeds. The optibelt OMEGA 5M HP transmits up to 3 times the power of an optibelt OMEGA 5M (an increase in power of up to 200%). The performance level of the optibelt OMEGA 5M HP roughly corresponds with the level of the considerably larger section optibelt OMEGA 8M – with the same pulley diameters.

PRODUCT DESCRIPTION

optibelt **OMEGA HP** TIMING BELTS



Power ratings overview

Profile and design	8M HP	8M	H
Pitch [mm]	8	8	12.7
Width [mm]	20	20	19.05
Pulley diameter [mm]	96.77	96.77	97.02
Speed [min ⁻¹]	2850	2850	2850
Nominal power [kW]	24.4	10.8	6.0

Overview of the advantages and characteristics of the optibelt OMEGA HP

- dimensionally stable structure with high flexibility
- low permanent and elastic stretch of the cord
- friction and abrasion resistant fabric with high shear strength
- approximately double power transmission capability (profile 5M HP approximately trebles the power transmission capacity) compared to OMEGA timing belts in their standard design
- suitable for low and high speed, high load drives
- good resistance and smooth operation, low and medium shock load
- large range of applications
- electrical antistatic according to ISO 9563 confirmed on request

Preferred application areas

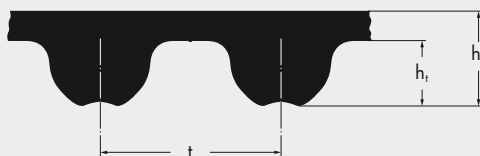
- textile machines
- machine tools
- compressors
- printing machines
- wood working machines
- paper machines

Advantages and characteristics of a drive with optibelt OMEGA HP timing belts in these application areas

- considerably reduced drive volume compared to OMEGA timing belts in standard design
- reduced costs for belts and pulleys
- greater options for drive design
- reduced shaft diameters and smaller bearings
- reduced running noise levels
- improved efficiency

Significant system cost reduction and high operational reliability for even greater economic efficiency in new drives

For additional advantages and characteristics, see optibelt OMEGA on page 20.



Profile	5M HP
t [mm]	5.0
h _s [mm]	3.4
h _t [mm]	1.9

Order example:

1000 = 1000 mm pitch length
5M HP = profile and design
25 = 25 mm belt width

POWER RATINGS

optibelt **OMEGA HP** TIMING BELTS

PROFILE AND DESIGN 5M HP



Table 17

Nominal power P_N [kW] for profile and design 5M HP and a timing belt width of 9 mm															
Speed of the small pulley n_k [min ⁻¹]	Number of teeth on the small pulley z_k														
	14	16	18	20	24	28	32	36	40	44	48	56	64	72	80
	Pitch diameter of the small pulley d_{wk} [mm]														
	22.28	25.46	28.65	31.83	38.20	44.56	50.93	57.30	63.66	70.03	76.39	89.13	101.86	114.59	127.32
700	0.36	0.44	0.53	0.61	0.77	0.93	1.09	1.25	1.43	1.59	1.76	2.09	2.43	2.76	3.09
950	0.45	0.56	0.68	0.78	0.99	1.20	1.40	1.62	1.83	2.05	2.25	2.68	3.09	3.52	3.92
1450	0.62	0.79	0.94	1.09	1.39	1.68	1.98	2.27	2.56	2.85	3.14	3.70	4.26	4.80	5.32
2850	1.04	1.32	1.58	1.83	2.32	2.79	3.27	3.71	4.15	4.59	5.00	5.77	6.49	7.12	7.68
20	0.01	0.02	0.02	0.02	0.03	0.03	0.05	0.06	0.06	0.07	0.07	0.09	0.10	0.12	0.14
40	0.03	0.03	0.05	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.17	0.20	0.22	0.25
60	0.05	0.06	0.06	0.07	0.09	0.10	0.13	0.15	0.16	0.18	0.21	0.24	0.28	0.32	0.37
100	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.23	0.26	0.29	0.32	0.38	0.45	0.51	0.58
200	0.13	0.15	0.18	0.21	0.26	0.31	0.37	0.43	0.48	0.54	0.60	0.71	0.83	0.94	1.07
300	0.17	0.22	0.25	0.30	0.37	0.45	0.53	0.61	0.69	0.77	0.85	1.01	1.18	1.36	1.52
400	0.22	0.28	0.32	0.38	0.47	0.58	0.68	0.78	0.89	0.99	1.09	1.30	1.52	1.74	1.94
500	0.26	0.33	0.39	0.46	0.58	0.70	0.82	0.94	1.07	1.20	1.32	1.58	1.83	2.09	2.35
600	0.31	0.39	0.46	0.53	0.68	0.82	0.95	1.10	1.25	1.39	1.54	1.84	2.14	2.44	2.73
800	0.39	0.49	0.59	0.68	0.86	1.04	1.22	1.40	1.59	1.77	1.96	2.33	2.70	3.07	3.44
900	0.44	0.54	0.64	0.75	0.94	1.15	1.35	1.55	1.75	1.96	2.16	2.56	2.97	3.37	3.77
1000	0.47	0.59	0.70	0.82	1.04	1.25	1.47	1.69	1.91	2.13	2.35	2.78	3.22	3.66	4.08
1200	0.54	0.68	0.82	0.94	1.20	1.45	1.70	1.96	2.21	2.46	2.71	3.21	3.70	4.20	4.67
1400	0.61	0.77	0.92	1.07	1.36	1.63	1.92	2.21	2.50	2.77	3.06	3.61	4.15	4.68	5.20
1600	0.68	0.85	1.02	1.18	1.51	1.82	2.14	2.45	2.76	3.07	3.38	3.98	4.57	5.13	5.68
1800	0.74	0.93	1.12	1.30	1.64	1.99	2.33	2.68	3.01	3.35	3.68	4.32	4.95	5.54	6.12
2000	0.79	1.01	1.22	1.40	1.78	2.16	2.53	2.90	3.25	3.61	3.97	4.65	5.30	5.92	6.51
2400	0.91	1.16	1.39	1.61	2.05	2.47	2.89	3.30	3.70	4.11	4.49	5.22	5.92	6.57	7.15
3200	1.12	1.44	1.71	1.99	2.52	3.02	3.53	4.00	4.47	4.92	5.35	6.14	6.84	7.44	7.95
3600	1.21	1.55	1.86	2.16	2.73	3.28	3.81	4.31	4.80	5.26	5.69	6.47	7.15	7.69	8.12
4000	1.30	1.67	2.00	2.32	2.92	3.51	4.06	4.59	5.08	5.55	5.98	6.75	7.37	7.83	8.14
5000	1.50	1.93	2.31	2.68	3.36	4.00	4.60	5.15	5.65	6.10	6.50	7.13	7.53	7.68	7.58
6000	1.67	2.16	2.59	2.99	3.73	4.39	5.00	5.54	6.01	6.41	6.73	7.12	7.16	6.85	6.19
7000	1.82	2.36	2.82	3.24	4.03	4.70	5.30	5.80	6.20	6.49	6.68	6.73	6.30	5.39	
8000	1.94	2.52	3.01	3.46	4.26	4.93	5.47	5.90	6.20	6.36	6.38	5.98			
10000	2.15	2.79	3.32	3.78	4.57	5.14	5.54	5.73	5.72	5.50	5.05				
12000	2.30	2.98	3.52	3.97	4.66	5.08	5.22	5.07	4.62	3.88					
14000	2.39	3.09	3.62	4.04	4.58	4.75	4.55	3.96	2.97						
Power ratings for other belt widths can be calculated by multiplying by the width correction factors.															

Width correction factor							
Profile and design 5M HP							
Belt width [mm]	6	Standard 9	12	Standard 15	20	Standard 25	30
Factor	0.61	1.00	1.44	1.87	2.63	3.40	4.15