

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

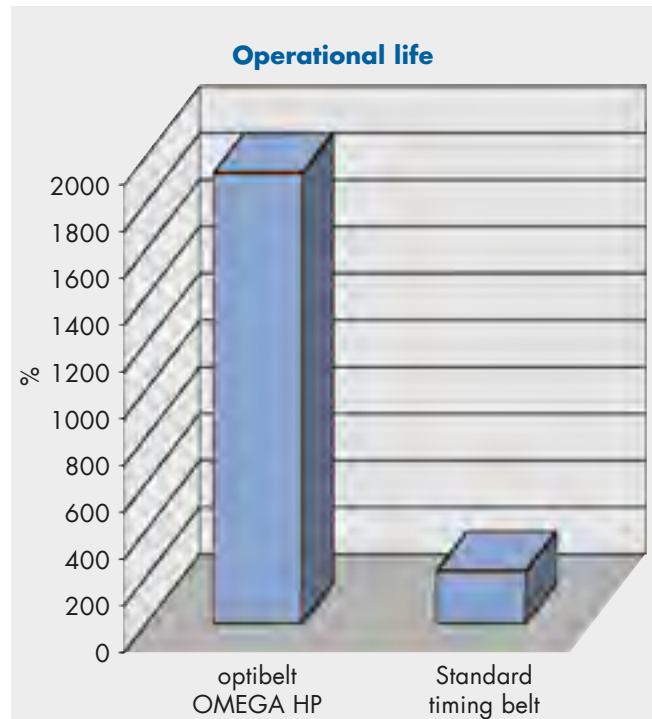
The optimized tooth shape and the indent in the tooth tip of the optibelt OMEGA promote a significantly lower noise level. In combination with the newly developed materials, the noise level is further reduced, even at high speeds and with high belt tensions.

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%.



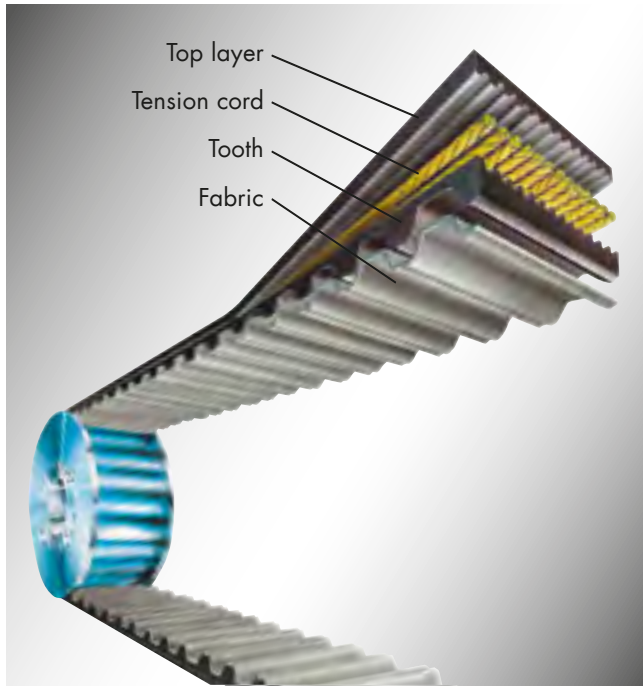
Application example: roller path

PRODUCT DESCRIPTION

optibelt OMEGA HP TIMING BELTS



Structure



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.

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.



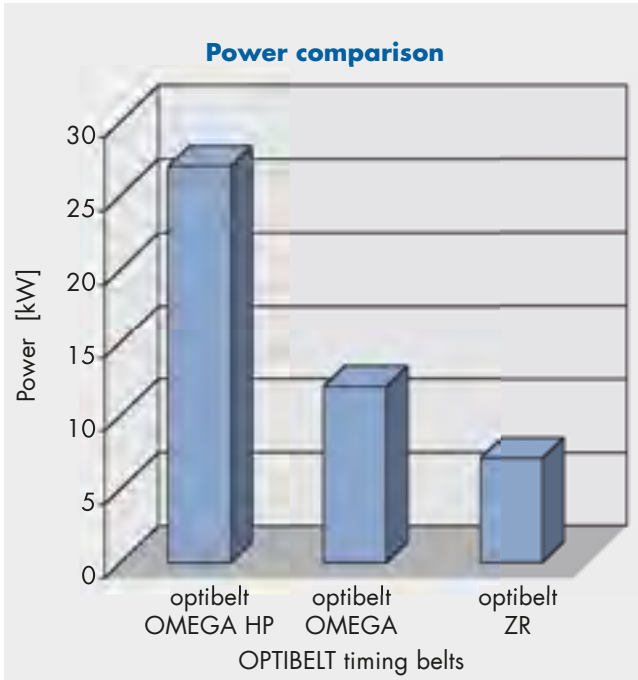
Application example: test bench

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

Preferred application areas

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

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

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

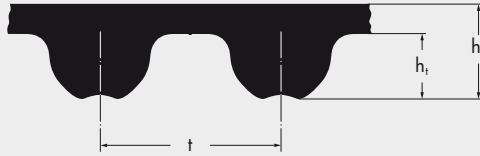
Significant system cost reduction and high operational reliability for even greater economic efficiency in new drives

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

PRODUCT DESCRIPTION

optibelt **OMEGA HP** TIMING BELTS

STANDARD PRODUCT RANGE



Profile	8M HP
t [mm]	8.0
h _s [mm]	5.4
h _t [mm]	3.2

optibelt OMEGA 8M HP								
Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
288 8MHP•	288.00	36	1000 8MHP	1000.00	125	2000 8MHP	2000.00	250
352 8MHP•	352.00	44	1040 8MHP	1040.00	130	2080 8MHP•	2080.00	260
376 8MHP•	376.00	47	1056 8MHP•	1056.00	132	2104 8MHP•	2104.00	263
416 8MHP•	416.00	52	1064 8MHP	1064.00	133	2240 8MHP	2240.00	280
424 8MHP	424.00	53	1080 8MHP	1080.00	135	2248 8MHP	2248.00	281
480 8MHP	480.00	60	1096 8MHP•	1096.00	137	2272 8MHP	2272.00	284
512 8MHP	512.00	64	1120 8MHP	1120.00	140	2400 8MHP	2400.00	300
520 8MHP	520.00	65	1128 8MHP	1128.00	141	2504 8MHP	2504.00	313
536 8MHP•	536.00	67	1160 8MHP	1160.00	145	2600 8MHP	2600.00	325
560 8MHP	560.00	70	1184 8MHP•	1184.00	148	2800 8MHP	2800.00	350
576 8MHP	576.00	72	1200 8MHP	1200.00	150	3048 8MHP	3048.00	381
584 8MHP•	584.00	73	1216 8MHP	1216.00	152	3280 8MHP	3280.00	410
600 8MHP	600.00	75	1224 8MHP	1224.00	153	3600 8MHP	3600.00	450
608 8MHP	608.00	76	1248 8MHP•	1248.00	156			
624 8MHP•	624.00	78	1256 8MHP	1256.00	157			
632 8MHP	632.00	79	1264 8MHP•	1264.00	158			
640 8MHP	640.00	80	1280 8MHP	1280.00	160			
656 8MHP	656.00	82	1304 8MHP	1304.00	163			
680 8MHP	680.00	85	1328 8MHP•	1328.00	166			
712 8MHP	712.00	89	1344 8MHP•	1344.00	168			
720 8MHP	720.00	90	1360 8MHP	1360.00	170			
760 8MHP	760.00	95	1400 8MHP	1400.00	175			
776 8MHP	776.00	97	1424 8MHP	1424.00	178			
784 8MHP	784.00	98	1440 8MHP	1440.00	180			
800 8MHP	800.00	100	1520 8MHP	1520.00	190			
824 8MHP	824.00	103	1552 8MHP	1552.00	194			
840 8MHP	840.00	105	1584 8MHP•	1584.00	198			
848 8MHP	848.00	106	1600 8MHP	1600.00	200			
856 8MHP	856.00	107	1680 8MHP•	1680.00	210			
880 8MHP	880.00	110	1696 8MHP	1696.00	212			
896 8MHP	896.00	112	1728 8MHP•	1728.00	216			
912 8MHP	912.00	114	1760 8MHP	1760.00	220			
920 8MHP	920.00	115	1800 8MHP	1800.00	225			
960 8MHP	960.00	120	1904 8MHP•	1904.00	238			
976 8MHP	976.00	122	1936 8MHP	1936.00	242			

Standard width: 20 mm, 30 mm, 50 mm, 85 mm
 (Further sizes and special width ranges on request) • Not available ex stock

Order example:

TIMING BELTS: optibelt OMEGA HP 1200 8M HP 20

1200 = 1200 mm pitch length
 8M HP = profile and design
 20 = 20 mm belt width

POWER RATINGS

optibelt **OMEGA HP** TIMING BELTS

PROFILE AND DESIGN 8M HP



Table 18

Nominal power P_N [kW] for profile and design 8M HP and a timing belt width of 20 mm																	
Speed of the small pulley n_k [min ⁻¹]	Number of teeth on the small pulley z_k																
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72	80
	Pitch diameter of the small pulley d_{wk} [mm]																
	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35	203.72
10	0.06	0.07	0.08	0.08	0.09	0.10	0.11	0.12	0.13	0.13	0.15	0.17	0.19	0.20	0.24	0.27	0.30
20	0.11	0.13	0.15	0.16	0.18	0.19	0.22	0.24	0.25	0.27	0.30	0.33	0.36	0.39	0.46	0.52	0.58
50	0.28	0.31	0.35	0.39	0.43	0.47	0.51	0.55	0.58	0.62	0.71	0.78	0.86	0.93	1.09	1.24	1.38
100	0.51	0.59	0.67	0.75	0.82	0.90	0.97	1.04	1.13	1.20	1.35	1.50	1.64	1.79	2.08	2.38	2.66
200	0.97	1.13	1.27	1.41	1.57	1.71	1.85	2.00	2.15	2.29	2.58	2.87	3.15	3.43	4.00	4.56	5.12
300	1.41	1.63	1.84	2.06	2.27	2.49	2.70	2.92	3.13	3.34	3.77	4.19	4.61	5.02	5.85	6.67	7.49
400	1.83	2.12	2.40	2.68	2.97	3.25	3.53	3.81	4.09	4.36	4.93	5.47	6.02	6.57	7.65	8.74	9.80
500	2.24	2.59	2.95	3.30	3.65	4.00	4.34	4.69	5.03	5.38	6.05	6.74	7.42	8.09	9.44	10.76	12.08
600	2.64	3.06	3.48	3.90	4.31	4.72	5.14	5.55	5.96	6.36	7.18	7.99	8.79	9.59	11.18	12.76	14.32
700	3.11	3.62	4.11	4.61	5.10	5.59	6.08	6.57	7.05	7.54	8.50	9.46	10.41	11.36	13.25	15.12	16.98
800	3.43	3.98	4.53	5.07	5.61	6.16	6.70	7.23	7.78	8.31	9.37	10.43	11.48	12.53	14.61	16.67	18.72
1000	4.19	4.87	5.54	6.22	6.89	7.56	8.23	8.89	9.55	10.21	11.53	12.83	14.12	15.41	17.97	20.50	23.01
1200	4.94	5.74	6.55	7.35	8.14	8.93	9.72	10.51	11.30	12.08	13.64	15.17	16.70	18.24	21.26	24.26	27.22
1450	5.88	6.85	7.82	8.78	9.73	10.69	11.64	12.58	13.52	14.46	16.32	18.17	20.01	21.84	25.46	29.03	32.56
1600	6.38	7.44	8.49	9.54	10.58	11.62	12.65	13.68	14.70	15.73	17.75	19.76	21.76	23.75	27.68	31.55	35.39
1800	7.09	8.27	9.45	10.61	11.77	12.93	14.09	15.23	16.37	17.51	19.77	22.02	24.23	26.44	30.81	35.11	39.34
2000	7.78	9.09	10.38	11.67	12.95	14.23	15.50	16.76	18.02	19.27	21.76	24.23	26.66	29.10	33.89	38.59	43.21
2200	8.46	9.89	11.30	12.71	14.11	15.50	16.89	18.27	19.64	21.00	23.71	26.40	29.04	31.69	36.89	41.97	46.96
2400	9.14	10.69	12.22	13.75	15.27	16.77	18.28	19.77	21.26	22.73	25.66	28.56	31.42	34.28	39.88	45.35	50.70
2800	10.47	12.25	14.03	15.78	17.53	19.26	20.99	22.70	24.41	26.10	29.46	32.78	36.04	39.30	45.65	51.83	57.82
3000	10.86	12.71	14.55	16.38	18.20	20.00	21.79	23.57	25.35	27.10	30.59	34.02	37.40	40.78	47.34	53.71	59.88
3500	12.72	14.91	17.08	19.23	21.36	23.48	25.59	27.68	29.75	31.81	35.88	39.88	43.78	47.68	55.20		
4000	14.28	16.74	19.19	21.62	24.02	26.40	28.77	31.11	33.43	35.73	40.26	44.72	49.03	53.34			
4500	15.80	18.53	21.25	23.94	26.61	29.24	31.85	34.43	36.98	39.51	44.48	49.34	55.20				
5000	17.27	20.27	23.26	26.20	29.12	32.00	34.83	37.65	40.43	43.16	48.53	53.75					
5500	18.71	21.98	25.20	28.40	31.54	34.66	37.72	40.74	43.73	46.67	52.39	57.92					
6000	20.08	23.66	27.06	30.52	33.86	37.20	40.51	43.69	46.86	50.00	56.05						
6500	21.39	25.32	28.82	32.54	36.06	39.60	43.18	46.46	49.82	53.14	59.47						
7000	22.64	26.97	30.46	34.44	38.14	41.84	45.71	49.05	52.58	56.08							
8000	23.82	28.62	31.96	36.20	40.06	43.92	48.09	51.42	55.12								

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor				
Profile and design 8M HP				
Standard belt width [mm]	20	30	50	85
Factor	1.00	1.58	2.73	4.76